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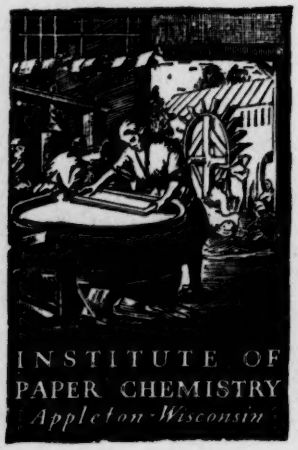
BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY



AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

LIBRARY NOTES

NOVEMBER · 1953

Volume 24 Number 3

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THE INSTITUTE OF PAPER CHEMISTRY

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Books and Pamphlets Added to the Library During October

ALPHABETS

SHAW, HENRY. The handbook of mediaeval alphabets and devices. London, Bernard Quaritch, 1853. 10 p. + 36 plates.

BIOGRAPHY

WHO'S WHO in commerce and industry. 8th international ed., including the indexed catalog of selected principal businesses, which by Marquis locator indexing provides reference from listed companies to career sketches of their ranking executives. Chicago, Marquis, c1953. 1389 p.

BLEACHING

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. *Pulp Purification Committee.* The bleaching of pulp. TAPPI monograph series no. 10. New York, The Association, 1953. 364 p.

BOARD MILLS

BATES, H. E. Pastoral on paper. Photographs by John Gay; map and drawings by Leslie S. Haywood. [Maidstone] The Medway Corrugated Paper Company [1953] 21 p. + 33 plates.

BOOK ORNAMENTATION

JOHNSON, HENRY LEWIS. Historic design in printing; reproductions of book covers, borders, initials, decorations, printers' marks and devices comprising reference material for the designer, printer, advertiser and publisher. Boston, Graphic Arts Company, 1923. 15 p. + 176 plates in box.

BOOK PLATES

BOWDOIN, W. G. The rise of the book-plate, being an exemplification of the art, signified by various book-plates, from its earliest to its most recent practice. Illustrated by reproductions in miniature and otherwise. With an introduction and chapter on the study and arrangements of book-plates by Henry Blackwell. New York, A. Wessels Co., 1901. 207 p.

BOOKS

POWER, JOHN. A handy-book about books for book-lovers, book-buyers, and book-sellers. London, John Wilson, 1870. 217 p.

CHEMISTRY, ANALYTIC—QUANTITATIVE

ORGANIC analysis. Editorial board: John Mitchell, Jr., I. M. Kolthoff, E. S. Proskauer, [and] A. Weissberger. New York, Interscience Publishers [c1953] v. 1. 473 p.

CHEMISTRY, ORGANIC

PROGRESS in organic chemistry. Editor, J. W. Cook. New York, Academic Press; London, Butterworths Scientific Publications, 1953. v. 2. 212 p.

CLAY

GRIM, RALPH E. Clay mineralogy. New York, McGraw-Hill Book Co., 1953. 384 p.

COLOR-PRINTING

EARHART, JOHN F. The color printer; a treatise on the use of colors in typographic printing. Cincinnati, Earhart & Richardson, 1892. 137 p.

COLORIMETRY

WRIGHT, W. D. The measurement of colour. London, Adam Hilger, 1944 (reprinted 1946). 223 p.

ECONOMICS

FAIRCHILD, FRED ROGERS, and SHELLY, THOMAS J. Understanding our free economy; an introduction to economics. New York, Van Nostrand [c1952] 589 p.

EMPLOYMENT

WOYTINSKY, W. S., *and others*. Employment and wages in the United States. New York, Twentieth Century Fund, 1953. 777 p.

ENGRAVINGS

FOWLER, ALFRED, ed. The romance of fine prints. Kansas City, Print Society, 1938. 194 p.

ZIGROSSER, CARL. Six centuries of fine prints. New York, Covici Friede [c1937] 406 p.

FINANCIAL STATEMENTS

FOULKE, ROY A. Practical financial statement analysis. 2d ed. New York, McGraw-Hill Book Co., 1950. 713 p.

FOAM

BIKERMAN, J. J., PERRI, J. M., BOOTH, R. B., and CURRIE, C. C. Foams: theory and industrial applications. New York, Reinhold, 1953. 347 p.

FOOD—ANALYSIS

WATT, BERNICE K., and MERRILL, ANNABEL L. Composition of foods—raw, processed, prepared. With the assistance of Martha Louise Orr, Woot-Tsuen Wu, and Rebecca Koonce Pecot. U. S. Dept. of Agriculture. Agriculture handbook no. 8. Washington [U. S. Govt. Print. Off.] 1950. 147 p.

ISOTOPES

BRADFORD, JOHN R., ed. Radioisotopes in industry. New York, Reinhold, 1953. 309 p.

LIBRARIES—DIRECTORIES

SPECIAL LIBRARIES ASSOCIATION. Directory of special libraries, comp. by Isabel L. Towner. New York, The Association, 1953. 297 p.

METALLURGY

NEWTON, JOSEPH. An introduction to metallurgy. 2d ed. New York, Wiley [c1947, 5th printing, 1952] 645 p.

PAPER MAKING AND TRADE—ECONOMICS

ALHANKO, ERKKI. Pulp and paper problem in Colombia. An academic treatise to be presented by permission of the board of professors of the University of Economics, Helsinki, for public criticism and examination in the aula of the University of Economics on October 19th, 1953, at 12 noon. Helsinki [Kauppalehti Oy:n Kirjapaino] 1953. 107 p.

POPLARS

ENTE NAZIONALE PER LA CELLULOSA E PER LA CARTA. Studi e ricerche sulla pioppicoltura. Roma, Ente nazionale, 1953. 96 p.

PRINTING-PRESS

MILLS, GEORGE J. Platen press operation. Pittsburgh, Carnegie Institute of Technology, 1953. 150 p.

REPORTS—PREPARATION

ULMAN, JOSEPH N., JR. Technical reporting. New York, Holt [c1952] 289 p.

SCIENCE—DICTIONARIES

STEWART, JEFFREY R., and SPICER, FRANCES ELIZABETH. Stewart's scientific dictionary, previously titled The national paint dictionary. Definitions of terms and scientific materials used in the chemical process industries. 4th ed. "Forest Gate" at Franconia, Alexandria, Va., Stewart Research Laboratory [1953] 788 p.

STATISTICAL METHODS

GRANT, EUGENE L. Statistical quality control. 2d ed. New York, McGraw-Hill Book Co., 1952. 557 p.

STRAW

ASSELMAN, TH. H., MULLER, F. M., and SMOLDERS, P. M. Studies on the digestion of rye straw with caustic soda. Treatise no. 2 of the Netherlands Experiment Station for the Utilization of Straw. [Groningen, Proefstation voor Stroverwerking, 1953] 27 p. + 34 unnumb. p. with graphs + 15 tables (14 fold.).

TRADE DIRECTORIES

PAPER AND PULP mill catalogue; engineering handbook. Collection of useful information for pulp and paper manufacturers [comp. by Harry E. Weston] 1953-54. 30th annual ed. Chicago, Fritz Publications [c1953] 538 p.

WALL-PAPER

COOK, CLARENCE. "What shall we do with our walls?" New York, Warren, Fuller, 1880. 35 p.

WATER—POLLUTION

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE. *Public Health Service. Division of Water Pollution Control.* Handbook of selected biological references on water pollution control, sewage treatment, water treatment. [Public Health Service publication no. 214. Public health bibliography series no. 8] Washington [U. S. Govt. Print. Off.] 1953. 66 p.

WATER-MARKS

ZONGHI, AURELIO, and ZONGHI, AUGUSTO. Zonghi's watermarks [including Paper, papermakers and paper-mills of Fabriano by A. F. Gasparinetti] Monumento chartae papyraceae historiam illustrantia, or collection of works and documents illustrating the history of paper. III. General editor: E. J. Labarre. Hilversum, Holland, The Paper Publications Society, 1953. 166 p. + 134 plates.

WOOD-ENGRAVINGS—PRINTING

LEIGHTON, CLARE. Wood-engraving and woodcuts. New York, Studio Publications, 1932. 96 p.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

AERONAUTICS IN FORESTRY

CLASON, MICHAEL. Aerial photography in Canadian forestry. Norsk Skogind. 7, no. 9: 295-301 (September, 1953). [In Norwegian; English summary] *cf.* B.I.P.C. 23: 785.

A survey of forestry conditions in Eastern Canada is given. The methods of combining aerial photo interpretation and field measurement in forest inventories by the Abitibi Power and Paper Co. Ltd. at Sault St. Marie are discussed; interpretation is done to cover types, density classes, and tree-height classes. The pioneer work in photogrammetry carried out by the Air Survey Section of the Forestry Branch of the Dept. of Mines and Resources in Ottawa is also described. Although the site and stand units are much smaller in Norway, and the ground is more broken, aerial photo surveys could be profitably applied to Norwegian forestry conditions. 1 table, 9 figures, and 11 references. E.S.

AIR CONDITIONING

EMPIRE BOX CORPORATION, *Garfield, N.J.*, and LEWIS, J. ROBERT. Plant production improved by humidity control system. Boxboard Containers 71, no. 730: 32-5 (October, 1953).

The case history of the corporation and data supplied by the second author are analyzed to discuss possible savings that may be expected in the use of complete or partial air conditioning. From the records and data the following conclusions were reached: when boxboard is processed with a moisture content between 5.7 and 6.3%, little trouble can be expected from cracked scores; a difference of as little as 10% in room R.H. can mean a difference of as much as 1% in the moisture content of boxboard; an R.H. of 50% is the most desirable indoor humidity; and humidification with unitary-type equipment will improve upon dry-air and unstable-humidity conditions. Starting with the installation of Walton humidifying units in the receiving and stock-storage rooms, these were extended to pressrooms and the folding, stripping, and gluing departments; none were placed in the laminating room which is subject to steaming nor in the shipping department. Although the problems of cracked scores and poor registry have not been entirely eliminated, the humidifiers have reduced them to a degree that they can be considered a worth-while investment. 2 tables and 6 figures. R.A.S.

AIR POLLUTION

FOULON, A. A modern method for waste-gas destruction. Wochbl. Papierfabrik. 81, no. 15: 568 (Aug. 15, 1953). [In German]

A brief reference is made to a new method developed by the Swiss engineer Karl Angst (the domestic and foreign patents have been assigned to the Air-Sana-Erdluftverwertung G.m.b.H., Pforzheim, Germany), according to which the harmful gases are filtered through layers of earth and special stones in a shaft under pressure; the waste gases are absorbed and the

purified air is recovered for air-conditioning purposes. The advantages of this new method are discussed. E.S.

ALKALINE PROCESSES

STONE, JOHN E., and WELLS, SIDNEY D. Alkaline pulping progress. Tappi 36, no. 11: 38A, 40A, 42A, 44A, 46A, 48A, 50A, 52A, 56A, 58A, 60A, 62A (November, 1953); Southern Pulp Paper Mfr. 16, no. 10: 55-8, 60, 62, 64, 66, 68, 70 (Oct. 1, 1953); *cf.* B.I.P.C. 23: 159.

A review of the literature dealing with alkaline pulping published during the calendar year 1952 is presented. The scope of this review includes brief mention of expansion in the industry, the pulping of various plant materials, liquor make-up and pulping variables, problems associated with black liquor recovery, odor abatement, stream pollution, and certain aspects of stock preparation, where these appear to have some feature characteristic of alkaline pulps. No mention is made of black liquor, tall oil, or turpentine utilization, or of the reactions between carbohydrate and alkali such as those associated with rayon manufacture. 215 references. E.S.

ALPHA PULP

RAYONIER INCORPORATED. New Rayonier Rayocord-X will produce better rayon. Paper Trade J. 137, no. 14: 25 (Oct. 2, 1953); Chem. Eng. Progr. 49, no. 10: News Sect. 54 (October, 1953); Paper Mill News 76, no. 40: 23 (Oct. 3, 1953).

The company announced the development of a new sulfite dissolving pulp, known as Rayocord-X, especially for use in high-stretch rayon spinning techniques. Three of Rayonier's mills are equipped to make the new product. 3 photomicrographs in the first and second and 1 illustration in the third reference. E.S.

ASBESTOS

ANON. Reclamation of asbestos. Natl. Bur. Standards (U. S.) News Bull. 37, no. 9: 139 (September, 1953); Tappi 36, no. 10: 102A (October, 1953).

Simple effective procedures for reclaiming asbestos from discarded pipe insulation have been developed at the National Bureau of Standards. Extraneous material is removed from asbestos cloth or asbestos-cotton cloth by chemical treatment, and the cleaned cloth is reduced to fiber in a paper-pulp beater. The recovered asbestos is unchanged chemically with little or no shortening of the fibers. Recovery of asbestos from molded insulation does not seem very practicable. E.S.

QUINN, R. G., and PAPER TRADE JOURNAL. How asbestos papers are made. Paper Trade J. 137, no. 18: 16-21 (Oct. 30, 1953).

Manufacturing techniques in the production of asbestos-fiber papers ranging in thickness from 2.5 to 60 mils are described. Although there are six varieties of asbestos fiber, the papers are made almost exclusively from the chrysotile variety (anhydrous magnesium silicate of the formula $H_4Mg_3Si_2O_9$), the most widely available and most readily adaptable to wet processing. Ways in which the paper production differs from that of cellulose fibers are pointed out. Asbestos papers are almost always made on cylinder machines and are formed with the addition of an organic binder, usually cornstarch; beater consistencies range much higher than for cellulose. The multicylinder machines on which the paper is made are very similar to

those employed in paperboard mills; felt costs are high and suction press rolls are not generally used. The great variety of grades of paper and their properties are described, with special emphasis placed on Quinterra and Quinorgo, the former made entirely of asbestos with no binder and the latter with an organic binder at the Johns-Manville plant at Tilton, N.H.; both have proved most efficient as insulation material, particularly in transformers. A brief historical note on the utilization of asbestos materials and a description of the Johns-Manville Corp. are appended. 8 illustrations.
R.A.S.

ASSOCIATIONS

TURCAN, C. I. Indian Paper Makers' Association. Indian Print & Paper 19, no. 1: 7-8 (July, 1953).

The chairman of the Association reviews the activities in the Indian paper industry during 1952, including paper prices, the rising costs of bamboo on account of the exorbitant freight from forests to mills, imports, and government activities. P. H. Sykes of the Bengal Paper Mill Co., Ltd. was elected chairman for 1953. E.S.

BAGASSE

BHAT, R. V. Bagasse paper as newsprint. Indian Pulp and Paper 8, no. 2:123-9 (August, 1953).

The utilization of bagasse for the manufacture of papers and boards of various kinds is reviewed. An investigation by the Forest Research Institute, Dehra Dun, was undertaken to determine a suitable process for the removal of the pith from the bagasse fiber and to pulp it in the equipment usually employed in the Indian paper mills. The results of the investigation showed the rod mill to be superior to the kollergang or defibrator for loosening the physical structure of bagasse for the removal of the pith. Experiments carried out on the pulping of the fiber by the soda process used an amount of caustic soda varying from 10 to 20% on the weight of fibers (ovendry basis), a cooking temperature from 142 to 162°C., and a cooking period from three to six hours. A paper made from 70% bagasse and 30% bamboo chemical pulp on a Fourdrinier machine was tested for its suitability as newsprint on a rotary press. The trial was declared a success; the only adverse property was an excess of translucency, which it was stated could be overcome. Newsprint from sugarcane bagasse should prove to be available at less cost than imported newsprint, since India's over 100 sugar mills now use the product for burning in their boilers. 2 tables and 2 illustrations.
R.A.S.

BÖRGER, HANS E. A. Paper and board from bagasse. Wochbl. Papierfabrik. 81, no. 13: 476, 478, 480 (July 15, 1953). [In German]

The author presents data on the chemical composition of the bagasse (I) fiber and its ash, discusses fiber length (which varies with the species), and outlines the recovery of sugar and (I) from sugar cane. The various attempts (successes and failures) for making paper and board from (I), with particular reference to the Celotex and Vazcane processes, and paper and board mills employing (I) as a raw material in different parts of the world at present (either exclusively or in combination with other components in the furnish) are reviewed. Since bagasse has hitherto been principally used as a fuel, the prime consideration for its economical utilization in a paper or board mill is the availability of a substitute fuel on a price-competitive basis. 5 tables and 1 diagram. E.S.

BARKERS AND BARKING

ANON. A new barking machine. Svensk Papperstidn. 56, no. 18: 719 (Sept. 30, 1953). [In Swedish]

A brief reference is made to a new whole-log barker with three revolving barking screws which remove the bark from a log in about 30 seconds. The barker was developed by the brothers Tage and Folke Ednell in Ämål in Sweden. The first model is now ready for inspection; the machine is completely automatic and serviced by one attendant. 2 illustrations. E.S.

FLATEBOE, E. I. Hydraulic log barking. J. Forest Products Research Soc. 3, no. 3: 56-8, 94 (September, 1953).

The author reviews various major designs of hydraulic-type barkers, describing the main operating features of each type. In addition, the advantages of hydraulic log barking are listed. Tables included give basic estimated costs and returns from hydraulic log barking. A list of installed Bellingham-type barkers of large and intermediate sizes is appended. 2 tables and 5 figures. E.S.

IVORY, E. P. Log barking for greater profit. J. Forest Products Research Soc. 3, no. 3: 54-5, 94 (September, 1953).

The author discusses the benefits (improved operating and salvaging operations) to be derived from log barking in a sawmill operating principally on white fir and sugar and ponderosa pine. The rossing type of barker produces a relatively smooth cylinder ideal for sawing, whereas hydraulic barkers are more suitable in pulp- and papermaking operations. The possible utilization of the ground bark of the three species for agricultural and chemical purposes is outlined. Analyses to determine the presence of elements valuable for use as a fertilizer or soil conditioner and water and solvent extractives are given in tabular form. All evidence shows that barking of logs can be profitable from several manufacturing standpoints; however, the major benefits will only be achieved when paying uses for the bark have been developed. 3 tables and 3 figures. E.S.

RANDALL, C. A., and ROSS, J. D. Recently developed barking machinery. Oregon Forest Products Lab. (Corvallis) Rept. no. E-1: 47 p. + 3 plates (October, 1953).

Various types of recently developed barking machines are described, including slab and edging barkers; pole, post, piling, and pulpwood barkers; and sawlog and peeler log barkers. The name of the manufacturer, designated purpose, price, operation, and installations are given for the individual barkers. 14 figures and 60 references. R.A.S.

BEECHWOOD

RITTER, GEORGE J. The chemistry and chemical utilization of beech. J. Forest Products Research Soc. 3, no. 3: 79-84 (September, 1953).

Results of a proximate analysis in which the four major components of beechwood were broken down into their subcomponents show that the percentages of extractives, ash, lignin, holocellulose, α-cellulose, hemicelluloses, methoxyl, acetyl, pentosans, and Cross and Bevan cellulose of beechwood closely approximate the percentages of the corresponding components of yellow birch and hard maple. These findings indicate that beech is on a

par with birch and maple for the production of α-cellulose for cellulose derivatives; for the production of wood sugars, molasses, yeast, and ethyl alcohol; and for the production by destructive distillation, of methyl alcohol, acetic acid, and charcoal. Beech bark, like the bark of birch and maple, has more than one third of its weight in lignin. Beech bark is especially high in ash content. Beechnuts are valuable as a food for animals such as hogs. They contain ample amounts of protein, fats, and carbohydrates. 11 tables and 21 references. E.S.

BOARD

CANADIAN INTERNATIONAL PAPER COMPANY. Man-made lumber. Esso Oilways [International ed.] 5, no. 5: 1-4 (1953).

The processes of manufacture, properties, raw materials used, and a comparison with wood are given for two fiberboard products, TEN/TEST and Masonite hardboard. The former is marketed as insulating board; the latter is tougher and denser than the insulating board. A recent development is the bonding of the two products to form a single panel. 10 illustrations. R.A.S.

GRANTHAM, JOHN B. Review of hardwood developments in the Pacific Northwest. J. Forest Products Research Soc. 3, no. 3: 89-91 (September, 1953).

The hardboard industry in the Pacific Northwest, based entirely on sawmill or veneer-mill wastes, is reviewed; the various processes [Asplund Defibrator, Chapman (*cf.* B.I.P.C. 23:235), semidry, and dry] and their capacities are summarized. The formation of a Pacific Northwest Section of the Hardboard Division of the Forest Products Research Society is outlined. 1 table and 4 references. R.A.S.

SCHWARTZ, S. L. Preparation of hardboard from white oak. Tappi 36, no. 10: 445-51 (October, 1953).

When hardboard from white oak Defibrator pulp was experimentally produced, peculiarities of pulp behavior were observed that can probably be attributed to the tannins and tanninlike substances in the wood. Disproportionately large amounts of affixing chemical—alum or ferric sulfate—were required to set the size in the white oak hardboard stocks. Peculiar, too, was the fact that a certain amount of size—rosin or paraffin— was required to secure hardboards of optimum flexural strength. This amount of size lay in the range of 0.75 to 1%. Amounts of size lower than this critical quantity, though adequate to impart water resistance to the boards, produced lower flexural strength. Washing the pulp with hot water to remove soluble tannins reduced the amount of affixing chemical needed to set the size from 6 to 2%, moisture-free pulp basis. The flexural strength, however, of the hardboards prepared with 6% of affixing chemical was appreciably higher than that of boards prepared with 2%. Some of the hardboards prepared were of class A grade. 4 tables, 10 figures, and 8 references. E.S.

BOARD—COATED

CURTIS, OSBORN M., JR. Customer requirements in coated boxboard. Tappi 36, no. 10: 159-60A (October, 1953).

Following an outline of the plant procedures through which coated board must pass, the purchasing agent of a manufacturer of high-class folding boxboard containers describes the detailed order forms of his company and the reasons for the high standards expected from the products. Only the highest-quality boards will meet these requirements satisfactorily; they include a uniform moisture content without curl or buckle and a minimum

of stretch and shrink, proper rigidity and snap, level and smooth-coated surfaces which will not crack, and uniform sizing. Uniformity of product in all categories is particularly stressed. The requirements for coated board are now as high as those for coated paper. E.S.

FISHER, HARRY C. The role of the board machine calenders in the mineral coating of paperboard. Tappi 36, no. 10: 150-4A (October, 1953).

An important reason for the imposition of mineral coating on board is the desire to improve the surface of the sheet in appearance and physical properties and to improve its ability to receive printing inks, varnishes, and other decorations; this must be done without altering the properties of the board. Cartons place great demands on the mineral coating of the board; the need for uniformity throughout all operations is stressed. When paperboard is machine coated, as by imprinting, the moving web of board in its course from the last heated drier roll of the board machine to the stack or stacks of finishing calender rolls can be considered to be in a plastic condition and responsive to plasticizing influences, particularly on its surface. By means of the water boxes on the calender rolls, solutions or dispersions of substances can be applied to the web before or after coating, or both, to control the quality, appearance, printability, etc. of the coated surface and to modify the properties of the coating mixture itself. Various plasticizing steps leading to calendering and overprinting are described. The use of water and water solutions, alcohol-water solutions and their advantages under certain conditions, resins or colors, corrosion inhibitors, insect repellents, etc., and the common defect of chalking are discussed. When freshly made board passes without pause through the coater and the finishing calenders immediately following it, much better results are obtained than when the board is stored in reels for a few days before coating and again before calendering. Calender treatments unavoidably cause loss of brightness of the white mineral-coated sheet; this can be compensated for by an equivalent increase in the brightness of the base stock and coating mixtures and by increased opacity. The control of wax pick values before and after coating of the web is desirable; however, deficiencies in these values cannot be cured by drastic calender applications without altering the printing quality of the coated surface to a marked extent. 1 table. E.S.

LOOMER, JOSEPH T. [Moderator] Coated board symposium. Tappi 36, no. 10: 160-5A (October, 1953).

The text of a panel discussion on machine coating of paperboard is presented which covered coating formulas and tests, weight tolerances, technical differences between smoothness and levelness, distance between nozzle and web, sizing of coating, use of insect repellents, comparative discoloration and fading in stock and coating, grease tests, scuffing resistance, and variations in coating weights. E.S.

POMPER, A. W. Considerations in the installation and operation of high and low solids coaters in a board machine. Tappi 36, no. 10: 154-9A (October, 1953).

The theoretical and practical aspects of two types of machines, the Microjet (I) and the Synchroset (II) coaters, are described. (I) is a low-solids coater operating on the principle of controlled removal of coating, whereas (II) is a high-solids coater of the metered application type; it can handle 65% solids coatings, as against 45% solids with present clay-casein formulations. (I) has greater flexibility, whereas (II) has the advantage of prohibiting incorrect coating weights caused by misadjustment. (II) requires considerably less air drying to prevent picking on the drying drums,

whereas (I) can apply greater coating weights smoothly if drying is available. (I) applies from 3 lb./1000 sq. ft. up at 45% solids, with lighter weights possible at lower solids; (II) applies from 2 to 3 lb./1000 sq. ft. at 65% solids. The space requirements are similar, with the early (I) design requiring more and the latest design less than (II). First costs of both machines are similar. The power required to drive the (II) rolls is greater than with (I), but considerable power is required for the centrifugal blower. Maintenance is negligible with (I), whereas replacement of doctors and replating of knurled rolls is a factor in the use of (II). Both machines are suitable for board-machine installations. The factors that have to be considered before the selection of either type is made include first cost, operating cost including power, drying and maintenance, available space, flexibility required, coating weight, and type of coating and board. 11 figures. E.S.

RENEGAR, GLEN T. Coating experiences with the Champion coater. Tappi 36, no. 10: 148-50A (October, 1953).

The experience with the Champion coater installed in two stations in the cylinder machine of the Container Corp. of America at Philadelphia is described in detail. Actually the machine tender's work depends entirely upon the uniformity and quality of the board supplied to him; a good-quality boxboard will result in a quality coating without any change to the equipment and color formulation. Hence, quality control in all boxboard operations is essential. The problems of printability, curl and moisture, picking, blackening, felt hairs, and wire and felt marks are discussed, and the need for securing adequate specifications from the customer is stressed. E.S.

BOARD—CONDITIONING

PETTERSSON, G. Experiences with continuous hardening and dampening of hanging wallboard plates. Svensk Papperstidn. 56, no. 18: 697-703 (Sept. 30, 1953). [In Swedish]

The new installation for the heat treatment and moisture conditioning of suspended wallboard sheets at the board mill of Pilgrimstads Aktiebolag, Sweden is described with the aid of a number of illustrations. With reference to unfortunate previous experiences in several Swedish board mills, particular attention was paid to fire and explosion hazards in the construction of the plant. The installation is housed in a separate building constructed of brick and concrete; the tunnel connecting the machine room and the new building is also built of concrete and provided with safety fire doors. In addition to the general gas exhausts two special safety valves have been installed in case dangerous pressures should build up; a complete sprinkler system has also been provided. The plant started operations in August, 1952. At first the heat-treatment chamber operated at 150°C. which was later raised to 165°. The boards, suspended in clamps, are exposed to this temperature for three hours, then pass through a cooling and finally through a moisture-conditioning zone which they leave with a temperature of 40° and a moisture content between 6-7%. One complete cycle requires about nine hours. The breaking strength of the conditioned products is consistently 25% higher than that of the untreated boards; the water absorption does not exceed 15% after six hours' insertion in a 20° water bath. No sizing agents whatsoever are employed. 17 figures. E.S.

BOARD—CONVERSION

AMERICAN BOXMAKER. Straight line flow at Acme Paper Box. Am. Boxmaker 42, no. 9: 14-16 (September, 1953); *cf.* B.I.P.C. 24: 52.

The second in a series describing production lines, the article traces the straight-line flow of folding-box operations and the circular flow of setup box manufacturing at the Chicago plant of Acme Paper Box Co. The former activity takes place on the main floor, and the latter on the second. 10 figures. R.A.S.

ANON. Industrial Container's Baltimore plant. Fibre Containers 38, no. 9: 38, 40 (September, 1953).

A brief description is given of the new corrugated box plant of Industrial Container Corporation at Baltimore, which started operations a little over a year ago. The major installation involves the 78-inch S&S corrugator with two single facers, one for C-flute and one for B-flute. One of the important products manufactured at the plant is the Duro-Seam glue-lap box; a Langston-Bowee folder gluer and Dewey and Almy Darex resin adhesive are employed for this purpose. The company was one of the pioneers in developing the glue-lap box in its Brooklyn plant, having started production in the spring of 1950. 5 illustrations. E.S.

BOARD, INSULATING

PACIFIC LUMBER COMPANY, *San Francisco.* New insulating board is strong and light. Food Eng. 25, no. 10: 193 (October, 1953).

A new insulating board (made primarily from redwood-bark fibers) aimed for use in roofs, walls, and self-sustaining partitions of cold storage and freezer rooms is claimed to be strong, lightweight, low in thermal conductivity, odorless, repellent to rodents and insects, and resistant to fungus and decay. R.A.S.

BOARD SIZING

VOGEL, PAUL. The use of bituminous emulsions and suspensions in the manufacture of paper and board. Wochbl. Papierfabrik. 81, no. 16: 604 (Aug. 31, 1953). [In German]

The use and advantages of bituminous emulsions added to the stock in the beater for the manufacture of waterproof boards, panel boards, automobile boards, shoe boards, and waterproof creped and wrapping papers are mentioned briefly, with particular reference to the bituminous products manufactured by Chemische Fabrik Flörsheim A.-G. and sold under the trade name Extrol. E.S.

BOARD TESTING—PHYSICAL

LUEY, A. T. Some factors affecting printability of boxboard. Pulp Paper Mag. Can. 54, no. 10: 118-21 (September, 1953); *cf.* B.I.P.C. 23: 625.

Stressing the importance of uniformity in board manufacture, the author reviews tests for the evaluation of printability of boxboard, particularly the suitability and limitations of the Bekk smoothness tester and the correlation of smoothness to compression. 5 figures and 3 references. E.S.

BUYING

HENRY LINDENMEYR & SONS, *New York.* Printer's guide for paper purchasing; how to order paper properly. Tappi 36, no. 10:

14A, 16A, 18A, 20A, 22A, 24A, 26A, 28A, 30A, 32A, 34A, 38A, 40A, 42A, 44A, 46A (October, 1953).

The article is a complete reprint of the pamphlet, "How to order paper properly," the second in the series "The Lindenmeyr Library of Print Shop Helps." An attempt is made to reduce the operation of paper buying to a few fundamentals, including items to check when ordering paper in sheets (quantity, size and weight, grade, color, finish, grain, trimming, packing, delivery, shipping, and special requirements), directions for ordering paper in rolls, importance of the bulk factor, the equivalent weight factor, strength and durability factors, association of color with finish and grade, and regular sizes and weights of printing papers. 38 tables and 1 paper inquiry and order form. R.A.S.

CALCULATIONS

GUT, HERMANN. The exact determination of the web length in a paper roll without weight determination. Wochbl. Papierfabrik. 81, no. 13: 462, 464-5 (July 15, 1953). [In German]

Calculations are presented and a formula is derived by means of which the exact length of a paper web in a roll can be determined without knowledge of the roll weight or the basis weight of the paper. The only measurements required are the caliper of the sheet and the inner and outer diameter of the paper roll, which are obtained with the aid of a micrometer and a millimeter stick, respectively. 1 table and 3 figures. E.S.

CELLULOSE—CRYSTALLINITY

SUSICH, GEORGE. Decrystallized cotton. Am. Dyestuff Reptr. 42, no. 22: 713-18 (Oct. 26, 1953).

The crystallinity of native cotton is markedly reduced after swelling in lower aliphatic amines without affecting the D.P., crystal lattice (modification), or orientation of cellulose I. Decrystallization increases the extensibility and the work necessary to rupture without lowering the tenacity of the fiber. The elastic recovery is higher after decrystallization if compared at identical and relatively low strain levels. Nevertheless, enhanced extensibility is attained mainly by increased permanent set. The excellent knot and wet behavior of native cotton fibers remain unaltered, but abrasion damage increases after the amine treatment. The elastic recovery of decrystallized cotton increases when wet. 2 tables, 20 figures, and 16 references. E.S.

CELLULOSE—HEMICELLULOSE

MAZUMDAR, A. K., and SARKAR, P. B. Auto-hydrolysis of jute hemicellulose. Textile Research J. 23, no. 10: 749 (October, 1953); *cf.* B.I.P.C. 23: 10.

The authors previously found that hydrolysis of jute hemicellulose with dilute sulfuric acid gave a maximum yield of 79.4% xylose (theoretical 85.5%). The difference may be due to partial decomposition of the xylose by the mineral acid. The present experiment demonstrates autohydrolysis (the hemicellulose in aqueous solution has a pH of 2.6). A 0.5% solution of ash-free hemicellulose in distilled water after refluxing produces 83.6% xylose (and no other sugar) after 384 hours. 1 table. K.W.,Jr.

WHISTLER, ROY L., and HOUGH, L. Two further aldobiouronic acids from hemicellulose-B of corn cob. J. Am. Chem. Soc. 75, no. 20: 4918-19 (Oct. 20, 1953).

Further investigation of the uronic acid-containing oligosaccharides produced by partial hydrolysis of corncobs has shown that two of the four aldobiouronic acids present are 2-O-(α-D-glucopyranosyluronic acid)-D-xylose and 4-O-(α-D-glucopyranosyluronic acid)-D-xylose. 12 footnotes.
E.S.

CELLULOSE ETHERS

DIECKMAN, S. F., JARRELL, J. G., and VORIS, R. S. Carboxymethylcellulose in the free acid form. Ind. Eng. Chem. 45, no. 10: 2287-90 (October, 1953).

This work was undertaken in an effort to prepare stable water dispersions of the free acid form of carboxymethylcellulose. It was found that aqueous solutions of carboxymethylcellulose sodium salt can be converted to stable dispersions of carboxymethylcellulose in the free acid form by treatment with a strong acid-type cation exchange resin. Amberlite IR-120, regenerated with 25 pounds of sulfuric acid/cu. ft., has an exchange capacity of about 30 pounds/cu. ft. of carboxymethylcellulose sodium salt of a D.S. of 0.7. The dispersions produced yield water-insoluble, alkali-soluble films on drying. The properties of films of carboxymethylcellulose in the free acid form suggest the possible usefulness of this material as a paper size or coating, as a pigment binder in inks and coatings, as a permanent textile size, as an adhesive, as a scaffolding fiber in textiles, and as an enteric coating for pharmaceutical products. 2 tables, 6 figures, and 3 references. E.S.

MCGILVRAY, D. I. The detection and determination of "end groups" in O-methylcelluloses. J. Chem. Soc.: 2577-82 (September, 1953).

Tetramethylglucose end groups have been detected and determined in hydrolyzates of methylcelluloses. D.P.'s have been calculated from physicochemical data and from end-group contents. To minimize degradation during methylation oxygen must be very rigorously excluded. The presence of end groups has been demonstrated in methylcelluloses soluble in chloroform-light petroleum (1:1) of D.P. about 1000 and in derivatives insoluble in this solvent and of greater chain length. This evidence is contrary to that upon which Haworth (*cf.* B.I.P.C. 10: 124) formulated his theory of the behavior of cellulose during methylation. The results do not exclude the possibility that the original cellulose might be branched to a slight extent. With the rigorous exclusion of oxygen during the methylation a high percentage of the product is insoluble in the chloroform-light petroleum solvent. These insoluble materials, although possessed of end groups, do not, on analysis, yield evidence which would provide a sound basis for conclusions as to the structure of the original molecule. 3 tables. E.S.

MINER, PEG. More muscle for paper. Du Pont Mag. 47, no. 5: 26-7 (October-November, 1953).

Beater Additive 7WD, a new grade of sodium carboxymethylcellulose produced by the Du Pont Co., is claimed to increase tensile and fold strength and give a more uniform paper. Mill trials on cylinder and Fourdrinier machines on many types of paper stock show these benefits on most papers, except those containing a large amount of groundwood. 3 illustrations.
R.A.S.

WURZ, OTTO. Experience with carboxymethylcelluloses in the paper industry. Das Papier 7, no. 19/20: 377-81 (October, 1953). [In German; English and French summaries] *cf.* B.I.P.C. 20: 165.

The author describes briefly the properties of different brands of a carboxymethylcellulose marketed under the trade name Polyfibron (I) and suitable applications in paper sizing, filling, and dyeing, where the addition of (I) to the commonly employed agents makes substantial savings possible. Improvements in surface properties of papers and boards for printing and suitable combinations with adhesives are also discussed. The colorimetric method of Eyler and Hall (*cf.* B.I.P.C. 18: 154) is recommended for the detection of the presence of carboxymethylcellulose in paper; the differentiation from methylcellulose by simple means is outlined. 1 table and 3 references. E.S.

CHEMICAL TESTING—COOKING ACID

CHÊNE, M. Determination of sulfur dioxide in bisulfite liquors. Papeterie 75, no. 8: 522-3, 525 (August, 1953). [In French]

Excerpts from the work by M. Chêne and A. Robert originally published in Ann. inst. polytech. Grenoble, 1953 are given. Total sulfur dioxide (I) in the cooking liquors was determined satisfactorily by the addition of an excess of standardized iodine solution, followed by a back titration of the excess. Free sulfur dioxide could be determined by direct titration with standard sodium hydroxide (using Thymol blue, but not phenolphthalein as indicator); best results were obtained by titration of the strong acids formed during the course of the iodometric determination of (I), preferably by using methyl orange as an indicator. Potentiometric titrations gave reproducible results. 3 tables, 1 diagram, and 5 references. L.E.W.

CHEMICAL TESTING—SULFITE WASTE LIQUOR

NEUMANN, FRITZ. Rapid oxidation of spent sulfite liquor with hydrogen peroxide for the determination of its inorganic constituents. Das Papier 7, no. 19/20: 388-91 (October, 1953). [In German; English and French summaries]

To determine the inorganic components present in spent sulfite liquor (I), the organic constituents must first be oxidized. The author recommends for this purpose the mixing of (I) with 30% hydrogen peroxide—about 10 ml./gram of dry substance in (I)—at room temperature, whereupon the mixture is poured slowly into a Kjeldahl flask containing boiling sulfuric acid. Examples for determining the total nitrogen and potassium in (I) are given to illustrate the application of the method. 2 tables and 6 references. E.S.

CHEMICAL TESTING—WOOD—CELLULOSE

BROWNING, B. L., and BUBLITZ, L. O. The isolation of holocellulose from wood. Tappi 36, no. 10: 452-8 (October, 1953).

The analytical preparation of holocellulose from black spruce by the chlorine-monoethanolamine method results in less carbohydrate loss than that occurring in the isolation of chlorite holocellulose. If partially chlorited products are further delignified by chlorine-monoethanolamine treatments, the carbohydrate loss is much greater than that occurring when either method is used alone. The amount of acid-soluble lignin in the various delignified products was estimated through ultraviolet absorbance measurements on the lignin filtrates. Acid-soluble lignin was present in all the delignified products, and it was particularly high in the woods partly delignified by acidified chlorite. Although the presence of sugar decomposition products leads to enhanced values of soluble lignin, the essential correctness of the soluble lignin was established from methoxyl data and from summative analyses which included total reducing sugars. All the delignified products

contained considerable chlorine, and those treated with monoethanolamine contained nitrogen. A part of the apparent increase in uronic acid content which occurs in the course of delignification may be caused by oxidized lignin products which yield carbon dioxide during the decarboxylation reaction. 5 tables, 3 figures, and 24 references. E.S.

CHIPS

CLONINGER, AVERY M. Wood chips from sawmill and veneer plant residues. J. Forest Products Research Soc. 3, no. 3: 51, 93-4 (September, 1953).

The development of the paper and paper-product business based largely on the purchase of raw material from sawmills and veneer plants is described. The author gives details of the purchase, handling, transportation, and control of the quality of the chips. Labor costs and investment in equipment and transportation facilities are indicated. It is pointed out that whole-log barking will in most cases double the amount of chips available. E.S.

CHLORINE

THOMAS, L. R. Developments in the production of chlorine with special reference to mercury cells. Ind. Chemist 29, no. 345: 489-97 (October, 1953).

The basic principles and characteristics of present-day mercury cells are reviewed. 3 tables, 18 figures, and 12 references. E.S.

CHLORINE DIOXIDE

MURPHY, E. A. Continuous chlorine dioxide measurement. Paper Mill News 76, no. 42: 74 (Oct. 17, 1953).

The use of a Beckman flow colorimeter and a Brown ElectroniK recorder for the rapid and continuous indication of the concentration of chlorine dioxide bleach liquor informs the operator about any tendency toward unbalance in the reactor in ample time to adjust the flows of liquid chlorate and gaseous sulfur dioxide, thus bringing the reaction back into line. 1 diagram. E.S.

CONTINUOUS COOKING PROCESS

DANNINGER, ALOIS. The continuous manufacture of pulp. Wochbl. Papierfabrik. 81, no. 13: 466, 468 (July 15, 1953). [In German]

The author reviews briefly results obtained with the Muskau continuous cooking process (*cf.* B.I.P.C. 14: 271-2) invented by Fritz Offermanns, and the Westad process (covered by German patent 593,890, granted in 1934), which involves evacuation of chips and impregnation under pressure with concentrated spent liquor, followed by cooking immediately at maximum pressure and temperature (up to 150°C.); greatly shortened cooking periods and higher yields of uniformly cooked pulp without screenings resulted. The inventor, Daniel Westad, died before he concluded his experiments and perfected his process; in 1937, the present author became acquainted with Westad's unfinished work and during the period from 1938 to 1943 caused further experiments to be made on a laboratory and pilot-plant scale. These confirmed the great possibilities of the method. The plant required for the Westad process is briefly outlined. E.S.

CORROSION

FLYNN, FRANCIS W., RICHTER, FREDERICK H., and SNYDER, FREDERICK B. Uneven corrosion in alkaline pulping digesters; a major cause and possible cures. Tappi 36, no. 10: 433-44 (October, 1953).

Several American Iron and Steel Institute (AISI)-type 405 alloy-lined digesters installed in 1948 experienced severe corrosion after a short period of service which was not general throughout the digesters. Some areas were attacked but other areas were uncorroded and covered with film and scale. The corrosion was found to result from a boiling action that takes place when small quantities of liquor contact the hot digester shell. This boiling action is similar to that occurring when small quantities of water are dropped on a hot plate. The digester shell, following a blow, remains approximately at the cooking temperature. In refilling, heat is extracted quickly from surfaces completely submerged in liquor. When uncooled surfaces are contacted with small quantities of liquor such as result from splashing or foaming, hot-plate boiling and corrosion result. Splashing during refilling is a major source of hot-plate boiling. Corrosion in type 405 alloy-lined digesters was arrested by two methods which prevent the hot-plate boiling action. One method involves the use of a specially designed metallic digester liner, the other involves admission of filling liquor at the bottom of the digester. Hot-plate boiling appears to be an important factor in causing uneven corrosion in carbon-steel digesters. The methods used in arresting corrosion in type 405 alloy-lined digesters should be beneficial in reducing uneven corrosion in carbon-steel digesters. 23 figures. E.S.

HEDSTRÖM, BENGT. Pure carbon steel *vs.* 5% nickel in tubes for black liquor evaporation. Svensk Papperstidn. 56, no. 17: 645-50 (Sept. 15, 1953). [In Swedish]

Several Swedish sulfate mills carried out experiments for comparing the corrosion behavior of evaporator tubes made from pure carbon steel (I) and steel containing 5% nickel (II). Four tubes each of (I) and (II) were weighed and installed in the evaporators. After a certain period (which varied from 3 to 12 months in the different mills), half of the tubes were removed and cleaned and weighed under standardized conditions. After another period of operation, the residual tubes were removed and treated in the same manner. The results obtained by the different mills are presented in tabular form; however, not all mills worked under exactly identical conditions. Those mills which tested at an advanced stage of evaporation used nonoxidized liquor with 55-60% dry solids at approximately 115°C. A comparison of the rate of corrosion in the evaporators of the same mill as well as between the evaporators of different mills indicates that the superiority of (II) over (I) is the greater, the more aggressive the corrosive conditions are. It is emphasized that the limited results of the present study should not be considered conclusive, but rather a preliminary experiment to serve as a basis for additional studies. 13 tables. E.S.

COTTON

SHEEHAN, W. C., BAILEY, T. L. W., JR., and COMPTON, JACK. Change in the fluorescence of Deltapine-15 seed cotton as a result of heat. Textile Research J. 23, no. 10: 736-43 (October, 1953).

The examination of cotton samples in ultraviolet light revealed a variable color fluorescence of the entire bale stock, ranging from violet to blue-violet to ivory-white. Further experiments indicated that the entire fiber mass could

be made ivory-white by heating. Unlike commercially ginned fibers, hand-ginned fibers appeared uniformly bluish in ultraviolet radiations, but they could also be made ivory-white on heating. Experiments were carried out to ascertain whether these heated white-fluorescent fibers had different physical properties from the unheated bluish-fluorescent fibers. Of the various properties examined, only the bending stiffness was found to be different; the heated fluorescent fibers were the stiffer. The cause of this change in fiber fluorescence on heating was found to be associated with the formation of oxycellulose. 8 tables and 6 references. E.S.

COTTON LINTERS

THORIA, LAVJI. Cellulose for acetate rayon. Indian Pulp and Paper 8, no. 1: 41-2 (July, 1953).

In discussing possible sources of raw material for the manufacture of cellulose acetate in India, the author considers cotton linters the most economically feasible source. Most of the Indian or desi cotton has practically nude seeds; however, a large variety of hybrid cotton with fairly fuzzy seeds is also grown and these can be delinted economically. 2 tables. E.S.

DIELECTRICS

HASTED, J. B., and EL SABEH, S. H. M. The dielectric properties of water in solutions. Trans. Faraday Soc. 49, no. 9: 1003-11 (September, 1953).

Measurements have been made of the microwave dielectric constants and losses of water and some aqueous solutions over a temperature range 0-60°C. The dielectric constant ε_s of water in the millimeter region rises from 5.0 ± 0.5 at 0° to 5.9 ± 0.5 at 60°, which is interpreted in terms of the rise in the number of molecules asymmetrically bonded to two neighbors only. The lower frequency dielectric constants ε_s of the solutions are interpreted in terms of the "irrotational" binding of water molecules to the solute, which is found to be almost constant over this temperature range. There is, however, a contribution from certain polar solutes even at microwave frequencies. The relaxation times of the solutions are interpreted in terms of the percentage of hydrogen bonds "broken," the variation of which with temperature can be related to the thermodynamic properties of water and the structural properties of the solution. 3 tables, 6 figures, and 14 references. E.S.

DRYING—PAPER

KNAPP, RUSSELL. Paper machine moisture control. Paper Mill News 76, no. 42: 66 (Oct. 17, 1953).

The author briefly outlines the mode of operation of several systems for controlling the steam to the driers as a means of moisture control in the sheet, including the tension roll controllers of the Stickle or Pickle type, the Foxboro Verigraph, the Mason Neilan systems (tension roll reset device and pilot drier system), the Brown Moist-O-Graph, and the Stamm and Armstrong-Stamm pilot drier systems. E.S.

LUKIANOVITCH, S. Moisture control with closed hoods. Pulp Paper Mag. Can. 54, no. 10: 126-31 (September, 1953); *cf.* B.I.P.C. 23: 587-8.

The author describes tests on totally enclosed newsprint machines at Iroquois Falls for studying some of the factors which influence moisture distribution across the reel; the temperature and humidity of the air supplied to the machine could be easily controlled under these conditions. Some of the

tests run covered: constant dry-bulb temperature, variable R.H. (felt supply air) *vs.* moisture; constant grains/pound, variable dry-bulb temperature (felt supply air) *vs.* moisture; general turbulence at one section of the felts *vs.* moisture at that section; effect of stray air currents on drying; exhaust fan operation *vs.* moisture; sweat-roll operation; and second press operation. While these tests were being run, all other factors remained constant. The results of these tests (which should not be considered conclusive) indicated that felt air temperature or humidity had little effect on drying of the sheet unless localized drying or wetting of the felts occurred. Turbulence on one section of the felts had little or no effect on the drying of the sheet in that section. One fan seems to be sufficient with closed-hood operation on the machines tested. The sweat drier may have a greater influence on drying than was previously assumed; additional studies are required to arrive at more conclusive results. 9 figures. E.S.

SINGH, TEK. The effect of drying pulp on the properties of paper made from it. Indian Pulp and Paper 8, no. 2: 137-9 (August, 1953).

Experiments are described for studying the causes of the inferior strength exhibited by papers made from previously dried pulp as compared with those manufactured from slush pulp without intermediate drying. The following conclusions were reached: Dried pulp after soaking produces sheets with lower strength properties and higher air permeability and opacity. If the changes on drying are of a physical nature only, maximum strength of the pulp can be restored with additional beating. If the fiber structure is loosened by beating or otherwise, the weakening effect of drying caused by irreversible physical changes increases. Repeated drying and wetting of pulp weakens the pulp with each drying cycle, although not indefinitely. When the water is displaced from the pulp by alcohol and sheets are made from this pulp, no loss in strength is noticeable. Drying at high temperatures enhances physical changes in the fiber structure and is likely to degrade the cellulose chemically, particularly in the presence of even slight amounts of mineral acids. Neutral pulp dried to a moisture content as low as 10% by pressing and steam heating and consumed without storage may still regain its maximum strength with additional beating. Drying of pulp by pressure and application of vacuum offers another possibility of avoiding chemical attack on cellulose. 1 table and 3 diagrams. E.S.

DYES AND DYEING

CAREY, B. J. R. The colouring of paper stock. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 34, no. 2: 311-22; discussion: 323-8 (June, 1953). [Abridgment]

A general survey is made of some of the more important factors which have to be considered when coloring paper stock. The pigments and dyes used, addition sequences, the use of toning colors, color nomenclature, the effect of the base furnish, the method of making a match under practical conditions, and various aspects of color work in a laboratory are among the points discussed. Recommendations are made for trouble-free dispersing of colors and for the construction of a color store; notes on color blindness are included. 1 table and 3 diagrams. E.S.

MCCLEARY, H. R. Fundamentals of the dyeing of cellulosic fibers. Textile Research J. 23, no. 10: 673-82 (October, 1953).

The theoretical aspects of the dyeing of cellulose with substantive dyes are reviewed. The oriented chainlike structure of cellulose containing both amorphous and crystalline regions influences both its dyeing properties and the optical appearance of dyed fibers. Dye sorption is believed to occur

only in the amorphous regions, where single molecules of dye are co-ordinatively bound to cellulose chains. Dyeing appears to be a diffusion-controlled reaction which determines the rate of dye-bath exhaustion. The movement of dye through a fiber is a hindered diffusion process further modified by sorption of dye. The affinities of dyes for cellulose are obtainable from equilibrium dye absorption data, and can be expressed quantitatively in terms of ΔF° values which are of the order of 3 to 6 kg.-cal./mole of dye sorbed. Affinities decrease with increase in temperature. Dyeing is exothermic; the values of $-\Delta H$ of the order of 10 to 30 kg.-cal./mole indicate at least two hydrogen bonds/molecule of dye. The filament size has an effect on the appearance of dyed fibers because of differences in the light which is scattered. The skin structure of rayons slows down the penetration of dye to the interior of the fibers. 2 tables, 10 figures, and 27 references. E.S.

MEHTA, R. M. Paper colouring. Indian Pulp and Paper 8, no. 1: 86, 88, 90, 92-3 (July, 1953).

The author discusses the common coloring matters and their applications under the four headings: natural coloring matters, inorganic pigments, organic pigments, and synthetic organic dyestuffs. The influence of variables, pH in particular, on the dyeing of paper is discussed briefly, and a few general directions for obtaining satisfactory results in beater dyeing are given. E.S.

SPIEGLER, LOUIS. "Naphthanil" coupling components: relationship between chemical structure and cellulose substantivity. J. Org. Chem. 18, no. 10: 1292-316 (October, 1953).

This paper deals with studies on the relationship between cotton substantivity and the aryl amides of 3-hydroxy-2-naphthoic acid and other aromatic *o*-hydroxycarboxylic acids which are known in the trade as Naphtol, Naphthol, Brenthol, or Naphthanil coupling components. Measurements from scale models of Naphthanil coupling components and their substantivity values exemplify relationships between substantivity and special arrangement as follows: (*a*) Products with linear configuration are more substantive than angular types. (*b*) Products which are flat, or coplanar have better affinity for cotton than analogous or isomeric products which are noncoplanar. (*c*) Substitutions or modifications which disrupt or disturb the coplanar configuration of the parent nucleus result in a reduction of substantivity. (*d*) Maximum fixation to cotton occurs in compounds which are predominantly linear and coplanar in configuration, and which contain a plurality of substantive groups, which are situated 10 A. units or multiples thereof apart, corresponding to the periodicity of the cellulose units which make up the cellulose chain. These relationships are similar to those observed for direct cotton dyes and are in agreement with the conception that co-ordinated hydrogen furnishes the link between cellulose and the direct dye or the coupling component. 20 figures and 43 references. E.S.

ELECTROPHORESIS

JERMYN, M. A., and THOMAS, R. Reduction of liquid flow in paper electrophoresis. Nature 172, no. 4381: 728-9 (Oct. 17, 1953).

Methods for the reduction of the undesirable liquid flow caused by the attainment of equilibrium in the paper and electro-osmosis during paper electrophoresis are described. The flow resulting from the attainment of moisture equilibrium can be minimized by clamping the buffer-soaked paper between the glass plates of the Woods-Gillespie paper electrophoresis apparatus. Electro-osmotic flow is due largely to the migration of ions dissociated from the carboxyl groups of the paper. It can be minimized by using

papers in which ionization is suppressed at the pH of the buffer. Methods of preparing basic and acidic papers are outlined; such papers give markedly improved separation of mixtures and electrophoretic patterns different from those obtained with untreated papers. 1 table and 10 references. P.D.

ENGINEERING

SCHAPHORST, W. F. Ideas from an engineer's scrapbook. Pulp and Paper Manual of Canada 21: 67, 69, 71, 73, 75, 77 (1953).

Useful suggestions and shortcuts for engineering problems and calculations are given. 3 tables, 3 nomographic charts, and 4 diagrams. E.S.

EUCALYPTUS

LEE, R. S. Importance of eucalypts as raw materials in the Australian paper industry. Assoc. tech. ind. papetière, Bull. no. 5: 132-7 (1953). [In French]

The author describes the available forest resources of Australia, outlines the chronological development of uses of eucalypts (I) in the paper industry, and discusses the organization of that industry. An example of a typical kraft cook of (I) is given. 2 tables, 1 map, and 6 figures. L.E.W.

EVAPORATION AND EVAPORATORS

A. Evaporators in the pulp mills. Wochbl. Papierfabrik. 81, no. 11: 374-6 (June 15, 1953). [In German]

The advantages of vacuum evaporators (usually in the form of multiple-effect evaporators) for handling spent sulfite and black liquors are described. 2 diagrams. E.S.

FIBER—STRUCTURE

EMERTON, H. W., and WATTS, J. Examination of spruce tracheids under polarised vertical illumination. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 34, no. 2: 269-84; discussion: 285-7 (June, 1953).

The use of polarized vertical illumination in the optical microscope is proposed as a means of distinguishing the primary wall of native cellulose fibers (which shows bright under crossed polars) from the exposed secondary wall which remains dark. The method has the great merit that no spurious effects can be introduced in the preparation of the specimen other than those brought about by drying the fiber. The effects observed with unbeaten bleached sulfite-spruce tracheids under these conditions are described, and explanations are put forward to account for them. In particular, interference fringes are often observed and these are believed to be caused by multiple reflections between the outer secondary and the primary wall or, alternatively, between the middle and outer secondary walls. Some unexplained phenomena are discussed. The technique opens up a wide field for further study and should prove valuable in the approach to many research problems, particularly those connected with stock preparation. Reference is made to several possible applications. 3 figures, 13 photomicrographs, and 10 references. E.S.

FLUID DYNAMICS

CORNELL, DAVID, and KATZ, DONALD L. Flow of gases through consolidated porous media. Ind. Eng. Chem. 45, no. 10: 2145-52 (October, 1953).

Certain problems arise in which gases flow through consolidated porous media at rates high enough to produce deviations from viscous flow. This flow region is sometimes called the inertial, quasi-turbulent, or turbulent-flow region. Equations for flow of this type based on simple measured characteristics of consolidated porous media were not available. Flow equations were written in terms of the fundamental variables and transformed into useful equations in terms of measurable quantities including permeability, porosity, and electrical resistivity. Data were obtained for four gases (dried filtered air, water-pumped nitrogen, pure-grade methane, and helium) flowing through 24 specimens of sandstones, limestones, and dolomites. These data were correlated by use of the measured physical characteristics of the samples using the equations. In the absence of complete flow data the equations and procedures developed may be used for predicting flow through consolidated porous media above the viscous region. The equations presented show how the Kozeny constant may be evaluated more accurately than previously possible. A method for experimentally determining the length of the path through a porous bed is given. 3 tables, 13 figures, and 25 references. E.S.

FOAM

ROSS, SYDNEY, HUGHES, A. F., KENNEDY, M. L., and MARDOIAN, A. R. The inhibition of foaming. V. Synergistic effects of antifoaming agents. J. Phys. Chem. 57, no. 7: 684-6 (October, 1953); *cf.* B.I.P.C. 22: 250-1.

Synergistic effects of antifoaming agents are investigated for foams of two synthetic detergents, Aerosol OT and Nacconol NRSF. The defoaming systems are (*a*) mixtures of Ucon 50-HB-3520 and 2-ethylhexanol and (*b*) mixtures of tributyl phosphate and methylisobutylcarbinol. The first of these shows a correspondence between antifoaming action and the free energy of spreading of the antifoam composition on the detergent solution. The second system shows no such correspondence, but a more complex effect related to the separate defoaming action of each constituent of the composition. 2 tables, 4 diagrams, and 7 references. E.S.

FOLDING BOXES

ANON. Gift boxes for the department store. Am. Boxmaker 42, no. 10: 16-17, 37 (October, 1953).

The folding box and the setup box are discussed as to their advantages and disadvantages for gift-packaging purposes. The setup box is claimed to be more attractive, less expensive, takes less time from the clerk, and can be purchased in smaller quantities, whereas the folding carton is stronger, takes less storage space, and is easier to handle. 4 illustrations. R.A.S.

FORESTS AND FORESTRY

ANON. Finland—forest resources and forest industry. Norsk Skogind. 7, no. 9: 287-94 (September, 1953). [In Norwegian]

Statistical data on the Finnish forest resources and exports, including the pulp and paper industry, for recent years (in some cases as far back as 1937) are given. 11 tables. E.S.

ROLLER, H. M., JR. Explanation of sampling pulpwood tracts. Southern Pulp Paper Mfr. 16, no. 10: 85-8; discussion: 86-8 (Oct. 1, 1953).

The author discusses the operational details of the type of sampling procedure being adopted by the Southern Pulpwood Conservation Association,

known as sampling with probability proportional to size, and the revisions in the classification of tracts. R.A.S.

FORESTS AND FORESTRY—PUBLIC RELATIONS

WEYERHAEUSER, J. P., JR. Tree farms and your future. Paper Mill News 76, no. 44: 14-15 (Oct. 31, 1953); Paper Ind. 35, no. 8: 880-1 (November, 1953); Pulp & Paper 27, no. 12: 42, 44, 46 (November, 1953).

The attitude of the American public toward the forest-products industries is discussed; information gathered in a national survey shows that the public is largely uninformed and misinformed regarding forest resources and the economics of the industry. Progress in reforestation and other data pertinent to the industry and the public welfare should be relayed to the public. R.A.S.

GUMS AND RESINS

WHITE, E. V. The constitution of sapote gum. II. Components of the methyl ether derivative. J. Am. Chem. Soc. 75, no. 19: 4692-4 (Oct. 5, 1953); *cf.* B.I.P.C. 23: 485.

Methanolysis of sapote gum methyl ether furnishes a sirupy mixture of glycosidic products which can be separated into two fractions. The components of one of these fractions have been reported previously. The second fraction is composed of compounds containing both the glycosidic methyl group and the uronic acid ester function. Further treatment of this fraction has furnished, in part, the anomeric forms of methyl (methyl 3,4-di-O-methyl-D-glucopyranosid)-uronate. These, characterized by reduction of the methoxycarbonyl group followed by hydrolysis of the glycosidic function to provide 3,4-di-O-methyl-D-glucose, furnish crystalline 3,4-di-O-methyl-D-glucuronic acid upon removal of the ester and the aglycone methyl group by hydrolysis. The remainder of the second fraction has not been resolved completely. Prolonged aqueous hydrolysis thereof furnishes 3-O-methyl-D-xylose as the alkylated sugar moiety. The molar ratio of the components of sapote gum methyl ether has been estimated, and some conclusions are drawn as to the molecular architecture of the macromolecule. 7 references. E.S.

HEATING

VANSLYKE, A. L. Report on Jotul stove performance test. Pulp Paper Mag. Can. 54, no. 9: 132-4, 137-8, 141, 143-4, 147-8, 151; no. 10: 154, 156, 158, 160, 162, 164, 167-8, 170, 172, 174 (August, September, 1953).

The report describes in detailed sequence the Jotul stove-performance test conducted at the Causapscal, Que. Forest Research Station; results show that the Jotul stove—a Norwegian development—consumed 35% less wood to obtain the same efficiency than the ordinary wood-burning camp stove. 13 tables, 16 figures, and 3 record forms. R.A.S.

HISTORY

ASH, WILLIAM W. E., JR. Paper hats for papermakers. Dopaco Diary: 14-15 (June, 1952).

In the house organ of Downingtown Paper Co. a brief article on paper hats or caps is published which is based on previous publications in the *Rothmill Quarterly Magazine* issued by Tullis Russell & Co., Ltd. of Markinch, Scotland. Around 1933, this company re-introduced the custom of wearing paper hats at work and at that time quite an interest in the

subject was aroused. In the two Scotch issues, directions are given for making the Bishop's cap, the Tullis Russell cap, and the square boxtype cap worn by Marchant Warrell, the first machine tender on a Fourdrinier paper machine. The use of paper caps seems to have been quite widespread, although they were not worn in all districts. In England and Scotland, this custom seems never to have died out. There can be no doubt that the making of paper hats originated as an expression of pride in craftsmanship. 2 illustrations in the *Dopaco Diary* and 31 figures and 1 reference in the *Rothmill Quarterly Magazine*. E.S.

SPORHAN-KREMPEL, LORE, and PICCARD, GERHARD. The oldest German paper mill. Parts I and II. Wochbl. Papierfabrik. 81, no. 13: 484-6, 488-90 (July 15, 1953). [In German]

In the first part of the article, "The history of the Gleissmühle at Nürnberg," the first author records the history of the conversion of the grist mill to a paper mill by Ulman Stromeir in 1390 to the mill's final demolition in 1479. The mill was active as a paper mill from 1390 to approximately 1438; during the later years of its existence it was used by Nürnberg's flourishing metal industry. The history of the founder's family and of later mill owners is also traced. Ulman Stromeir kept a diary from which most of the data of his mill are known. Already as early as the beginning of the 15th century, this diary was considered an important historical source which was frequently copied and incorporated in other works, usually with alterations and additions. Discrepancies between the original text and some of the old copies are discussed, with particular reference to the lack of the story of the imprisonment of the two Italian journeymen in the original; the present author considers this incident an invention of later writers and presents chronological evidence in support of her opinion. In the second part, the other author describes some of the watermarks of the Gleissmühle (lily and bull's head). 7 figures and 15 footnotes. E.S.

H-ION CONCENTRATION

MATAGRIN, AM. Hydrogen potential (P_H or colloquially pH), its measurement, and its exact relationship to acidity and alkalinity. Papeterie 75, no. 7: 469-71, 473, 475; no. 8: 533-5, 537, 539, 541 (July, August, 1953). [In French]

Methods and instruments for the measurement of hydrogen-ion concentration are reviewed; a table listing indicators and their pH ranges is included. 1 table and 31 references. E.S.

HYDROGEN PEROXIDE

ROTH, E. M., JR., and SHANLEY, E. S. Stability of pure hydrogen peroxide. Ind. Eng. Chem. 45, no. 10: 2343-9 (October, 1953).

The widespread application of high-strength hydrogen peroxide has made stability information of increasing importance. To date, little information has been available about the stability of hydrogen peroxide in the highest concentration range. The Warburg manometer has been adapted to measuring the decomposition rate of peroxide solutions. The method is useful for all peroxide concentrations and is sensitive to give results in a reasonable length of time at ordinary storage temperatures. The effects of purity, stabilizers, acid concentrations, temperature, and surface to volume ratio on stability were measured. Although this work was conducted on a fundamental basis, the results should be of interest in all cases where hydrogen peroxide is to be stored, transported, and used. 13 tables, 5 figures, and 10 references. E.S.

INSECTS AND VERMIN

ANON. Budworms frustrated, softwood stands saved in 1953's $3 million air-spray assault. Pulp Paper Mag. Can. 54, no. 10: 136-7 (September, 1953).

The operation by 77 planes spraying 1,100,000 gallons of formulated DDT over an area covering 1500 square miles of Northern New Brunswick forest land in an effort to stamp out the spruce budworm and keep the trees alive is described. 1 map and 11 illustrations. R.A.S.

BRACEY, P., and BARLOW, F. Urea-formaldehyde resin as a vehicle for semi-permanent insecticidal and fungicidal coatings on bookbindings and bookcases. J. Documentation (Aslib) 9, no. 3: 157-68 + 2 plates (September, 1953); *cf.* B.I.P.C. 20: 401.

Types of insects which damage books (starch, cellulose, and protein feeders) are discussed, and laboratory tests performed with urea-formaldehyde as the vehicle for insecticide coatings are reported. Because insect damage to books originates in the binding, it appears that protective treatments could be best applied to bookcloths and/or endpapers before or after binding. Urea-formaldehyde resins can be loaded with the insecticides (DDT, Dieldrin, Aldrin, and gamma BHC) as solid solutions so that these can be retained indefinitely within the films as a "bloom" of solid material or released as a vapor. Urea-formaldehyde lacquers containing insecticide were applied to bookcloth, detached bookbindings, bookshelves, and bookcases. The lacquer formulation for each application is listed; results six months after treatment at the badly infected Salisbury Cathedral Library in Southern England show that any one of the formulations protected books and shelving, and no adverse effects were observed. 4 tables, 7 figures, and 11 references. R.A.S.

INSTRUMENTATION

ANON. Instrumentation control at the Newton Falls Paper Mill, Inc. Paper Mill News 76, no. 42: 60 (Oct. 17, 1953).

A brief reference is made to Tracerlab beta gages, Hygrotesters, and Minneapolis-Honeywell equipment for pH control installed on the company's paper and coating machines for the control of basis weight, moisture, and pH. 4 illustrations. E.S.

ANON. Progress in application of instruments. Indian Pulp and Paper 8, no. 1: 82, 84-5 (July, 1953).

The possibilities and limitations of instrumentation in general are reviewed, with reference to applications in the pulp and paper industry. 2 illustrations and 1 reference. E.S.

BRENNSTOFF-WÄRME-KRAFT. Instrumentation in small and medium-sized steam plants. Wochbl. Papierfabrik. 81, no. 7: 230-2 (April 15, 1953). [In German]

An excerpt of a report of a round-table discussion of German experts on heat and power generation and representatives of the instrumentation industry and their respective associations is presented. The lack of instruments in small or medium-sized plants, poor maintenance of existing instruments, the need for simple inexpensive instruments of sturdy construction, the impossibility of combining low prices and high accuracy, adequate maintenance of instruments and its cost, the correct education of maintenance

personnel, and special instrumentation problems in steam plants were considered. E.S.

FLEMING, J. G. The human side of instrumentation. Paper Mill News 76, no. 42: 112 (Oct. 17, 1953).

A consideration of the operator of recording and control instruments has led to improvements in readability and distance viewing. Statistics on the size of the average man and his reaching and viewing distances are used as the basis for selecting and arranging control-board equipment. R.A.S.

FREILICH, ARTHUR. Why graphic panels? Paper Mill News 76, no. 42: 78, 80, 82, 110 (Oct. 17, 1953); *cf.* B.I.P.C. 23: 638.

Since the latter part of 1950 when the first graphic panel was installed on a washer line in a pulp mill, the paper industry has rapidly risen to a position of being the second-largest user of this type of instrumentation. Several typical installations of graphic panels are described, including panels for the control of a bleach plant, chlorine dioxide generation, stock washers, and service maintenance. Several mills are installing graphic panels on pulp digesters, particularly of the semichemical type; other possible applications would be in the recovery process, including causticizing and lime recovery and in the evaporator room, and on the wet end of the Fourdrinier machine. 7 illustrations. E.S.

HALL, GEORGE A., JR. The place of centralized instrumentation. Paper Mill News 76, no. 42: 103-4 (Oct. 17, 1953).

Central panelization of instruments provides savings in labor, materials, and utilities; these benefits will be the greater, the higher the centralization. However, some processes (such as the acid or evaporator plant) do not lend themselves to too great centralization, whereas others (steam distribution or treatment of incoming water) are examples of far-reaching supervision possible from one point. Digester-room and bleach-plant instrumentation are subject to a wide variation with regard to the extent of their coverage. The number of digesters, washing stages, or bleach stages affects the ease with which instruments can be centralized into one panel board. Wherever possible, greater centralization of supervision and control has led to greater production, higher quality of pulp and paper, and more economical operation. A mill can better afford to have a highly trained man in charge of a central control board than to have several helpers running back and forth between widely spaced observation points. 3 illustrations. E.S.

LUNDY, RODNEY. Achieving and maintaining moisture standards on a paper machine. Paper Mill News 76, no. 42: 62, 64 (Oct. 17, 1953).

When moisture control on the paper machine is attempted, it is necessary to consider the entire wood pulp and paper process, including control and uniform results from the woodroom, acid plant, digester cycle, and bleaching and refining processes. All papermaking operations must be held constant and within close control; it will then be comparatively easy to measure and control the moisture of the sheet on the paper machine by instrumentation. However, large corrections should not be applied at this late stage; if they should become necessary, they indicate the malfunction of previous operations, which should be corrected. E.S.

PAPER MILL NEWS. Indicating and control instruments used in pulp and paper mills. Paper Mill News 76, no. 42: 44-5 (Oct. 17, 1953).

Results of a survey made by the editors of the magazine listing 38 different recording and control instruments and their location in pulp and paper mills is presented. A second listing of the instruments is in alphabetical order. 2 tables. R.A.S.

SCHNYDER, A. P. [Moderator] Kraft mill control instrumentation. Paper Mill News 76, no. 42: 56-8 (Oct. 17, 1953).

Instrumentation in a kraft pulp mill is discussed by members of a panel representing mill and instrument companies. The contributions of two of the panel members are reproduced in full and are: Andrews, Edgar. Brown stock washer instrumentation, p. 56-7; and Scrivens, Donald. Black liquor evaporator process, p. 57-8. Discussions of other members of the panel are summarized; Henry S. Drinker, Jr. spoke on digester instrumentation; James M. McAlear, paper machine instrumentation; Arthur Noble, graphic panels; and A. P. Schnyder, the growth of instrumentation. 3 illustrations. R.A.S.

UPSON, J. R. A well trained and organized instrument department—a must at world's largest integrated kraft container plant. Paper Ind. 35, no. 7: 785-7 (October, 1953); *cf.* B.I.P.C. 23: 252.

This is essentially the same article as the previous reference. 9 figures. E.S.

INTERIOR PACKING

ANON. Economical cushioning. Modern Packaging 27, no. 2: 152-3, 228 (October, 1953).

The Haeger Potteries, Inc., Dundee, Ill. now packages its products with excelsior pads and blankets which are wrapped around the individual pottery items and also serve as a shock-absorbing liner for the corrugated shipping case. These pads, which replace loose excelsior, were found to bring advantages in protection, packing efficiency, storage space, and freight costs. 4 illustrations. R.A.S.

LIBRARIES

NIEMI, TAISTO JOHN. Building a library collection for the pulp and paper curriculum at Western Michigan College of Education. Tappi 36, no. 10: 125-8A (October, 1953).

The author describes the building up of the library collection by purchases, gifts, and exchanges. E.S.

LIGNIN

AGGARWALA, JAGDISH C. Studies on delignification of sabai grass. Indian Pulp and Paper 8, no. 1: 36-9 (July, 1953).

Sabai grass (*Eulaliopsis binata*) (I) was delignified under controlled conditions with caustic soda in a laboratory autoclave; the black liquor was collected and used for the isolation of lignin with hydrochloric acid. An analysis of (I) is included (52.34% Cross and Bevan cellulose, 27.2% pentosans, and 16.07% Klason lignin with 8.79% methoxyl groups by Standard TAPPI methods). In general, the lignin content of (I) is much lower than that of either coniferous or deciduous trees and of bamboo. Lignin and methoxyl balances for the reactions during the soda cook are presented; they show a much greater percentage loss of methoxyl groups (34.4%) than of lignin (22.8%) and the reasons for this difference with postulations on the possible structure of (I) lignin are discussed. Pure lignin isolated from the black liquor of (I) was found to contain 62.5%

carbon and 5.74% hydrogen. The ultraviolet absorption spectra of (I) lignin show a maximum at 2570-2800 A., which is similar to that of other lignin types. 7 tables. E.S.

HÄGGROTH, STEN, LINDGREN, BENGT O., and SAEDÉN, ULLA. The rate dominating reaction of the delignification of wood powder with sulphite solutions. Svensk Papperstidn. 56, no. 17: 660-9 (Sept. 15, 1953). [In English; German and Swedish summaries]

To delignify wood by heating with sulfite solutions, the lignin component must be altered in two respects. First, a certain number of sulfonic acid groups must be introduced into the lignin to render it more hydrophilic; and second, some linkages which bind the lignin in the wood must be hydrolyzed, a process which is catalyzed by hydrogen ions. Hägglund postulated that sulfonation is a more rapid process than hydrolysis, the latter therefore being the rate-controlling factor. Maass and co-workers, on the other hand, in investigations concerning the influence of the composition of the sulfite solution on the rate of delignification advanced the theory that sulfonation is the rate-controlling factor. To study this problem further, wood meal was heated with a large excess of sulfite solution and the rates of delignification and lignin sulfonation were determined and compared. The authors came to the conclusion that at high total sulfur dioxide contents, hydrolysis only governs the rate of delignification, whereas at low contents, especially if the pH is lower than 2, sulfonation also influences the rate. The kinetics of the hydrolysis and the chemical nature of the hydrolyzable groups are discussed. 9 figures and 26 references. E.S.

MEREWETHER, J. W. T. Studies on the lignin of *Eucalyptus regnans* F. Muell. IX. The precipitation of alkali lignin with carbon dioxide. Australian J. Appl. Sci. 4, no. 3: 444-50 (September, 1953); *cf.* B.I.P.C. 23: 888.

Four fractions of alkali lignin have been isolated from *Eucalyptus regnans* F. Muell. soda black liquor by successive precipitation with (*a*) carbon dioxide to pH 9, (*b*) carbon dioxide to pH 8, (*c*) concentration to one third followed by recarbonation, and (*d*) sulfuric acid. Each fraction has been further fractionated by organic solvents and it has been found that the three fractions obtained with carbon dioxide may be fractionated to yield substantially the same alkali lignin-A and alkali lignin-B as those previously isolated. Addition of sulfuric acid to the filtrate from the carbonation of black liquor yields fractions lower in carbon and methoxyl content, and apparently contaminated with carbohydrate. 5 tables and 10 references. E.S.

LUBRICATION AND LUBRICANTS

STANDARD OIL COMPANY (N.J.), *New York*. Lubrication of paper mill machinery. Esso Oilways [International ed.] 5, no. 5: 19-21 (1953); World's Paper Trade Rev. 139, no. 26: 1974, 1976, 1981-2 (June 25, 1953).

The importance of correct lubrication in the high-speed, continuous operation of the equipment of paper mills is stressed. Some of the factors which govern the choice of suitable lubricants for the different sections of the Fourdrinier paper machine are discussed. 4 diagrams. E.S.

MACHINERY

ANON. High-speed papermaking. Esso Oilways [International ed.] 5, no. 5: 9-13 (1953).

The technique of increasing the speed of papermaking is described; this is based on the integration of all phases of manufacture so that there is no possibility of any single process impeding the flow of material from the raw material to finished paper. Since the basic technique of papermaking has not changed, the improvements have been in the various machines and equipment; examples of the assembly of machinery in German factories are given. 13 illustrations. R.A.S.

MONTROSS, CHARLES F. Entrainment separation. Chem. Eng. 60, no. 10: 213-36 (October, 1953).

A comprehensive survey of the types, design, and performance of liquid entrainment separators is presented, covering gravity settlers, centrifugal separators, impingement separators, scrubbers, electrical precipitators, and sonic collectors. 12 tables, 45 figures, and 57 references. E.S.

MACHINERY—BOARD MACHINES

ANON. Continuous production of building board. Pulp Paper Mag. Can. 54, no. 10: 122-5 (September, 1953); *cf.* B.I.P.C. 24: 108.

An illustrated description of the Bartrev press and process for the continuous manufacture of board from wood waste is given. 6 figures. E.S.

MACHINERY—CALENDERS

SEATON, ALBERT. Calenders and calender rolls today. Paper Trade J. 137, no. 14: 14-16, 18 (Oct. 2, 1953).

The author discusses the care and maintenance of calenders and calender rolls; the various phases described cover: care of the calender stack, roll structure, roll casting, machining and grinding, roll markings, crowned rolls, and design developments. 5 illustrations. R.A.S.

MACHINERY—CONVERTING MACHINERY

THE THRISSELL ENGINEERING COMPANY, LTD., *Bristol, England.* Rolling quadrant cutter and creaser. Fibre Containers 38, no. 9: 45-6, 48 (September, 1953).

A new type of cutting and creasing press for corrugated and solid fiberboard and folding boxboard is described. The blanks are cut by means of the nip action between a rolling quadrant and a regular cutting and creasing form (I), which is secured to a metal backing plate and is held in inverted position on a crosshead or bed. The action of the rolling quadrant against (I) in the bed of the press in much like that of an inverted rocking chair. A special stream feeder with a descending pile delivery is used for cutting and creasing folding boxboard. The operation of the press is outlined with the aid of schematic drawings. 6 figures. E.S.

MACHINERY—DRIVE

STEULMANN, GERT. Studies on the efficiency of the paper-machine drive. Wochbl. Papierfabrik. 81, no. 13: 456-60, 462; no. 14: 533-7 (July 15, 31, 1953). [In German]

Although the drive of a paper machine requires approximately 40% of the entire power consumed in a paper mill, the selection of the drive should never be considered alone, but always in connection with the entire power and heat economy of the individual mill. The layout of the mill, accessibility of the

individual machinery during repairs, future expansion plans, and separation of power generation and mill operations are some of the factors which determine the over-all success of an undertaking. The author discusses the different types of steam-turbine and electric-motor (single or sectional) drives, as well as their advantages and disadvantages under different mill conditions. Data on the efficiency of the different drives are summarized in tabular form. The calculated efficiency of the direct turbine drive is closely linked with the quantity, price, and utilizability of supplementary live steam; the highest calculated efficiency is obtained with the sectional d.c. motor drive. 3 tables, 10 figures, and 7 references. E.S.

MACHINERY—DRIVE, ELECTRIC

PHILIPPI, H. Synchronized electric motor drives in the pulp and paper industry. Wochbl. Papierfabrik. 81, no. 11: 372-4; no. 12: 407-9 (June 15, 30, 1953). [In German]

Following a brief introduction on the principles of electric motor regulation, the possibilities for synchronizing sectional paper-machine drives are reviewed. 15 figures. E.S.

MACHINERY—DRYERS

CIRRITO, A. J. An evaluation of drying concepts. Tappi 36, no. 10: 476-80 (October, 1953).

Factors governing heat transfer inside paper driers are analyzed. The influence of shell rotation on the steam-side coefficient is discussed with reference to the application of heat-transfer data from other fields. Steam-side resistance in paper driers operating at both low and high speeds is found to be of appreciable magnitude. The effects of vapor velocity and non-condensable gases are described. Recommendations are made for improving operating techniques with existing equipment and for promoting better design of new equipment. 1 table, 3 figures, and 20 references. E.S.

MACHINERY—FELTS

ANON. Surface obtained on paper. Paper-Maker (London) 126, no. 4: 288, 290 (October, 1953).

The part played by drying cylinders and drier felts in the finish on a paper machine, particularly in esparto mills, is pointed out. It was an unwritten law in fine paper mills that these required woolen drier felts for good finish, and a comparison of the surface of a cotton drier felt with a woolen drier felt justifies this demand. With the return of the buyers' market, several mills are reverting to the use of woolen felts; the outstanding example is a newsprint mill where, contrary to the usual practice of running cotton drier felts (or cotton-asbestos or cotton-synthetic fibers), all woolen drier felts are employed. E.S.

HANSSON, KARL-FILIP. The wet felt and its water content. Svensk Papperstidn. 56, no. 16: 925-33 (Aug. 31, 1953). [In Swedish; English and German summaries]

A short review is presented of the properties of the woolen fiber and woolen felts, followed by a survey of the factors which exert an influence on the water content of wet felts in the paper industry. The addition of a surface-active agent (Teepol, made by Shell Chemicals Ltd., London) increases water drainage already at concentrations as low as 0.01%. Dewatering also increases with the temperature of the felt because of decreasing

viscosity of the water. During dewatering in the nip area, the water content after the nip, expressed as moisture retention (k) was investigated under different line pressures (p) and with different speeds, resulting in the formula $k \times p^{c_1} = c_2$, wherein the parameters c_1 and c_2 vary with the speed. The water content of the felt after the nip is higher at a higher speed when all other factors are kept constant. A higher water content of the felt before dewatering in the nip will result in a higher water retention when speed and linear pressure remain constant. 2 tables, 14 figures, and 20 references. E.S.

MACHINERY—PAPER MACHINE

RETTMEYER, W. Improvements in paper-machine construction. Assoc. tech. ind. papetière, Bull. no. 5: 126-31 (1953). [In French]

Recent improvements in the different sections of the Fourdrinier machine from headbox to driers, calenders, and winders are reviewed briefly. 7 illustrations. E.S.

MACHINERY—PIPING

ANON. The care of steam piping systems. Indian Pulp and Paper 8, no. 2: 140-3 (August, 1953).

The author discusses preventive maintenance of piping systems and valves, including correct first installation and sizing, regular periodic inspection and overhaul, complete layout drawings, accessible location of checking points, the keeping of up-to-date records, elimination of vibration, and sufficient provisions for expansion and contraction of the equipment during heating and cooling cycles. E.S.

MACHINERY—REFINERS

LE FLOCH, JEAN. Considerations of the refining of cellulosic fibers. Papeterie 75, no. 9: 589, 591, 593, 595, 597, 599-601, 603 (September, 1953). [In French]

After outlining the objectives of the refining operation and the underlying theory and variables involved, the author discusses briefly, but critically, the functioning of present-day refiners. A new, high-speed refiner (I), carrying a smooth eccentrically placed conical rotor is then described and illustrated by means of schematic sketches. In this refiner, the usual pump is replaced by a geared displacement-type pump which permits the constant flow and processing of stock irrespective of the (high) pressure used. The installation, operation, and advantages of (I) are described briefly. 2 tables and 9 figures. L.E.W.

MACHINERY—SCREENS

LINDGREN, K. Dirt removal from fibrous materials. Assoc. tech. ind. papetière, Bull. no. 2: 38-44; no. 5: 138-52 (1953). [In French]

Following a general discussion on methods of separating impurities from fibers, the author describes the techniques, equipment, and combinations of different types of machinery used in screen rooms for the efficient dirt removal from bleached and unbleached sulfite and sulfate pulps, regenerated papers, straw and bagasse pulps, and mechanical pulps, with particular reference to Jönsson and Lindgren screens. Fine screens (Bird) and vortex-type dirt separators employed ahead of paper and board machines (Assablador, Vortrap, Dirtec, etc.) are also reviewed. 16 figures. E.S.

MACHINERY—SORTING MACHINE

RODNEY HUNT MACHINE COMPANY. *Special Products Division, Orange, Mass.* [The Bench-evator] Tappi 36, no. 10: 114-16A (October, 1953).

A new low-cost, bench-stand table lift and work positioner, called the Bench-evator, and its advantages for inspection work in the finishing room are described briefly. 2 illustrations. E.S.

MACHINERY—STOCK PROPORTIONING METERS

BUZZARD, W. S. Automatic proportioning of newsprint furnish at Ontario Paper Co. Paper Mill News 76, no. 42: 72 (Oct. 17, 1953).

The Fischer and Porter automatic furnish-proportioning system (involving three large Ratosleeve variable-area flowmeters for groundwood, sulfite, and broke and smaller Flowrator meters for alum, carbonate filler, and color solution per paper machine) and its mode of operation are described. 3 figures. E.S.

MACHINERY—STRIPPING MACHINE

LUSCOMBE, E. A. Automatic stripping for the carton industry. Am. Pressman 63, no. 11: 48, 50, 52 (October, 1953).

The Miehle automatic stripping device and pile delivery designed for application to any Miehle no. 70 cutting and creasing press is described. The device consists of a conveyor, a stripping mechanism, and a delivery. The actual stripping is accomplished by hooks or barbs which are positioned in the lower drum or cylinder in such a manner that the barbs penetrate the scrap and enter grooves in the upper drum as the sheet passes between an upper and lower drum. The scrap is thus retained on the lower drum and later removed automatically by a combing device, while the stripped sheet passes on to the delivery unit. An advantage claimed in the use of the device is a saving in handling by running complex "nested" forms which can be completely stripped. 6 illustrations. R.A.S.

MACHINERY—SUCTION BOXES

BRAUNS, O., and OSKARSSON, R. Water drainage and air flow through suction boxes and the suction couch roll. Svensk Papperstidn. 56, no. 18: 691-6 (Sept. 30, 1953). [In Swedish; English and German summaries]

Experiments were carried out on the experimental paper machine at the Central Laboratory in Stockholm to determine the influence of various factors during the travel of the paper web over the suction boxes and the suction couch roll. For this purpose a special suction box was constructed which was divided into several compartments, each of which was provided with separate water separators and measuring instruments for the exhaust air. The length of the suction box in the couch roll could be varied. An endless plastic cloth traveled with the wet web over this couch-roll suction box, the arrangement permitting variations in suction time, vacuum, and air quantities, each independent of the others. As soon as the moist paper web passes the edge of the suction box, the sheet is compressed; under the influence of pressure differences between the top and bottom side of the sheet, the water in the web moves in the downward direction, the fibers following in this tendency on account of surface-tension phenomena. The capillaries are finally drained, and air flow through the sheet sets in, provided the

vacuum is sufficiently large to overcome the surface-tension forces. Air flow starts with a certain moisture content, which varies with the size of the capillaries, including beating degree and sheet formation. The higher the vacuum, the sooner the capillaries are drained and the sooner air flow starts. With an unbleached sulfite pulp beaten to 55° S.-R., air flow started at a dry content of approximately 7.5%; when this was raised to about 12%, the air quantity pulled through the sheet amounted at about 3 liters/sq. m. of paper surface at 55° and to about 11 liters/sq. m. at 30°. The major part of drainage took place immediately after the sheet had passed the front wall of the suction box. If the vacuum is interrupted, the water is drawn back into the paper web by capillary forces. Hence, it is fundamentally correct to install narrow, coherent suction-box sections with gradually increasing vacuum; their dimensions will depend upon machine speed. Of the factors influencing the travel of paper over the suction-couch roll, the following three were studied with an unbleached sulfate pulp of 28-30 and 20-25° at machine speeds of 50 and 100 m./min.: width of suction zone (suction period), magnitude of the air quantity drawn through the sheet, and magnitude of the vacuum. The dry content was found to increase with the vacuum and with the air quantity until 50-70 liters/sq. m. paper surface were drawn through the sheet. The suction time did not affect the dry content appreciably. It seems, therefore, that the width of the suction zone should be selected so as to permit the highest possible vacuum for the air quantities mentioned. 18 figures. E.S.

MACHINERY—VALVES

BEARD, CHESTER S. How to use valves in solving today's control problems. Paper Trade J. 137, no. 15: 14-18, 21-2 (Oct. 9, 1953).

Factors which should receive consideration in the selection of regulators and control valves for pulp and paper mill service are discussed, including pressure regulation, liquid level control, and temperature control. Suitable valve bodies and actuators for these purposes are described, followed by a brief discussion on the selection of appropriate valve materials. 1 table and 17 figures. E.S.

MACHINERY—WEB TRANSFER

HEYS, RALPH C. Vacuum pick-up history. Paper-Maker (London) 126, no. 4: 290 (October, 1953); *cf.* B.I.P.C. 22: 671.

Millspaugh's first patent for a suction-couch roll was taken out in 1909; the earliest patent showing the use of vacuum to transfer a sheet of paper is dated August, 1911 and this applies to a vertical stack of press rolls. The vacuum transfer stacked press was evolved in February, 1931. This Millspaugh patent is probably the first publication on vacuum transfer of the presently accepted design. Hence, vacuum transfer of a sheet of paper has been in the minds of Millspaugh engineers for over 50 years. E.S.

MATERIALS HANDLING

HENKLE, O. T., JR. How to cut cost of fork truck operations. Paper Trade J. 137, no. 16: 54-5 (Oct. 16, 1953).

The one factor in the operation of a fork truck which cannot be incorporated in its mechanization is the skill of the operator. General rules for proper use of equipment, proper loading, proper movement of loads, and general safety precautions are given. 4 illustrations. R.A.S.

MILZ, HAROLD. High stacking and fork truck stability. Paper Ind. 35, no. 7: 791-2 (October, 1953).

An analysis of truck stability factors, calculation of overturning moment,

and practical pointers for operators are presented as pertinent information for high stacking with maximum safety. 3 figures. R.A.S.

MATERIALS OF CONSTRUCTION

ANON. Stainless steel big factory in modern mill construction at Jacksonville. Paper Ind. 35, no. 7: 773-4 (October, 1953).

The many applications of stainless steel in the design and construction of processing equipment in the new kraft pulp and paper mill of St. Regis at Jacksonville, Fla. (*cf.* B.I.P.C. 23: 654) are briefly enumerated. In conclusion, reference is made to a special kraft interleaving paper made by St. Regis and used in the processing of stainless steel for protecting the smooth surfaces from heat and friction while the metal is being coiled, uncoiled, and recoiled in cold rolling, annealing, and pickling operations. A more durable grade of southern kraft has recently been developed by the company with at least four times the service life of the earlier gr' 'es. 6 illustrations. E.S.

AR. Experiences with aluminum and its alloys in the paper industry. Wochbl. Papierfabrik. 81, no. 16: 603-4 (Aug. 31, 1953). [In German]

The suitability and limitations of aluminum and its alloys in paper-mill applications are reviewed. E.S.

INDUSTRIAL AND ENGINEERING CHEMISTRY. Materials of construction for chemical engineering. Ind. Eng. Chem. 45, no. 10: 2171-282 (October, 1953); *cf.* B.I.P.C. 23: 186-7.

The seventh annual review surveys the recent developments in the use of 13 construction materials, as reported in the published literature. The sections on carbon and graphite, iron and low-alloy steels, lead, and paint cover two years or more. Ceramics, copper, hard rubber, and wood materials are omitted in this review. The tabular review, fifth in the series, includes tables on new or revised data on the properties of several alloys (aluminum; iron, mild steels, and low-alloy steels; and nickel and high-nickel alloys), on two cements (epoxy and polyester types), and on a type of graphite. The authors and titles of the individual articles are as follows: Fritts, Harry W. Aluminum alloys—3 figures and 84 references, p. 2175-82; Gaylord, W. M. Carbon and graphite—2 figures and 39 references, p. 2182-4; Payne, C. R. Cements—3 figures and 66 references, p. 2185-8; Fisher, Harry L. Elastomers—3 figures and 197 references, p. 2188-98; Grove, C. S., Jr., Vodonik, Joseph L., and Casey, Robert S. Fibers—3 tables, 4 figures, and 163 references, p. 2199-204; Shaw, Homer L. Iron, mild steels, and low-alloy steels—3 figures and 85 references, p. 2205-10; Roll, Kempton H. Lead and lead alloys—4 figures and 29 references, p. 2210-14; Teeple, H. O. Nickel and high-nickel alloys—3 figures and 270 references, p. 2215-32; Scofield, Francis. Paints—143 references, p. 2233-6; Seymour, Raymond B. Plastics—4 figures and 244 references, p. 2237-41; Luce, Walter A. Stainless steels and other ferrous alloys—8 figures and 303 references, p. 2241-54; Nekervis, Robert J. Tin and its alloys—11 figures and 185 references, p. 2254-60; Bekebrede, W. R., and Yntema, L. F. Less common metals—2 tables, 6 figures, and 134 references, p. 2261-9; and Fritts, H. W., *and others*. Properties of chemical engineering materials of construction—3 tables and 27 references, p. 2270-82. R.A.S.

METERS AND RECORDERS

GREER, W. N. How to hold paper stock at specified pH. Paper Mill News 76, no. 42: 102, 104 (Oct. 17, 1953).

Applications of Leeds and Northrup automatic pH control of paper-machine stock with Speedomax and Micromax controllers and their advantages are outlined. 2 illustrations. E.S.

THE NORCROSS CORPORATION. Process control viscometers for the paper industry. Paper Mill News 76, no. 42: 136 (Oct. 17, 1953).

Industrial viscometers for process control and possible applications in the pulp and paper industry (control of paper coating, size presses, and adhesives for corrugating board) are described. 3 figures. E.S.

MILL CONTROL

ANON. Modern laboratory at Kenora keeps constant check on newsprint. Paper Ind. 35, no. 7: 771-2 (October, 1953).

The routine testing program and instruments used in the control laboratory of The Ontario-Minnesota Pulp & Paper Co., Ltd. are described briefly. 4 illustrations. E.S.

POLLOCK, D. S. Production control. Paper Box Bag Maker: 120-2 (September, 1953).

The underlying purpose of production control is a scientific approach to the problem of planning work in advance and then obtaining its achievement in logical sequence. The author discusses the basic principles of production control under planning, progress, and control, and the development and instruments of such a system. Its advantages are outlined. 1 chart. E.S.

NEWSPAPERS

THE GUILD REPORTER. American Newspaper Guild analysis of the newspaper industry. Newsprint Service Bur. Bull. no. 429: 2-3 (October, 1953).

Statistics on advertising and circulation revenue of U. S. newspapers in 1952 show a substantial increase over preceding years; advertising accounts for about 75% of the income, circulation for 25%. A comparison of newspaper costs in 1952 with that in 1945 shows an increase of 181% in mechanical costs, which includes newsprint and ink as the heaviest single expense item, whereas costs for Guild departments (editorial, advertising, circulation, business, administration, and general) rose only 111%. The point is stressed that newspapers (including small-city papers) could well use some of the profits they are enjoying to increase the wages of the staff, recognized as the lowest paid of the professional workers. 2 tables. R.A.S.

NEWSPRINT—STATISTICS

ZIMA, J. J. World production and distribution of newsprint paper—1952. Newsprint Service Bur. Bull. no. 428: 2-3, 6-12 (September, 1953); *cf.* B.I.P.C. 23: 895-6.

The report, compiled in co-operation with the Pulp, Paper and Paperboard Division of the National Production Authority, U. S. Department of Commerce, shows the global output of newsprint paper in 1952 (10,611,000 short tons) to be in approximate balance with over-all current requirements. Although the total world production of newsprint showed an increase, six countries produced less and two the same amount as in 1951. All other countries on which data were available showed an increase; the greatest relative ones

were Argentina with 200%, Japan 40%, Brazil 26%, and Spain 15%. Estimates for production in Soviet-dominated countries are also included. Data on exports show only five countries which exported as much as 100,000 tons of newsprint; these were Canada, Finland, Sweden, Norway, and the United States. Exports to the United States from all countries rose only 1%; a total of 5,036,300 tons was used, of which 96% came from Canada. 16 tables. R.A.S.

PACKAGING

ALLEN, NELSON. The future of flexible films in self-service. Paper Sales 13, no. 10: 18, 52 (October, 1953).

A much wider use of flexible films in rapid-growing, self-service merchandising is predicted. Various types of film are described, including physical properties and particular products suitable for packaging in each type. R.A.S.

ANON. Aluminum trays for frozen dinners. Paper Sales 13, no. 10: 19 (October, 1953).

Packaging for a complete precooked frozen dinner consists of a divided aluminum tray, aluminum foil cover, printed carton, and cellophane overwrap. 2 illustrations. R.A.S.

ANON. Oven-baking cartons. Modern Packaging 27, no. 2: 110-12 (October, 1953).

Dry ingredients used in making brownie- and macaroon-baked products are packaged in a glassine bag and an outer foil-lined carton. The contents are removed from the bag, mixed with egg and water, and poured into the lower portion of the foil-lined carton which serves as a disposable baking tin. 4 illustrations. R.A.S.

ANON. Packaging materials. Food Eng. 25, no. 10: 115-18, 196-7 (October, 1953).

The development of packaging materials since 1928 is reviewed; particular types of significant materials (containers, boxes, papers, plastic films, fiber drums, and multiwall bags) are described and the over-all trends are discussed. Considered the latest important factors are the trend toward low-cost, flexible-type packages and silicone-coated parchment which prevents the sticking of products to the paper. The author recommends the formation of a packaging committee in each individual company for more efficient development of research, purchasing, production, and quality control in the future. 1 figure. R.A.S.

GOTTSCHO, IRA. There is profit in the use of pre-codes. Am. Boxmaker 42, no. 10: 13-15, 35 (October, 1953).

The value of precoding, defined by the author as the number placed by the supplier on packaging materials for his and the packer's convenience, is illustrated by examples of problems traced through precode numbers. Benefits to be gained from this practice are listed, and numbers in use by various companies show designations for dimensions, tolerances, date made, supplier's symbol, die number, requisition number, type of carton, product, and export. 7 illustrations. R.A.S.

MARTIN, JOHN W. The baking industry . . . a potential for packaging. Paper, Film and Foil Converter [previously Am. Paper Converter] 27, no. 10: 23-5 (October, 1953); *cf.* B.I.P.C. 24: 20.

The text is almost identical with that of the previous reference. 4 illustrations. E.S.

MODERN PACKAGING. Better industrial packaging. Modern Packaging 27, no. 2: 105-9, 244, 246 (October, 1953).

Improved materials, methods, and trends in the field of industrial packaging are reviewed. New materials being used in the construction of containers are a lamination of wood veneer between two sheets of kraft containerboard, a dehydrated package for corrosion prevention, molded polyethylene containers for corrosive chemicals, and wirebound crates. Methods and machinery have been developed for coating paper with polyethylene and other resins, for laminating paper with reinforcing fibers such as glass, for unit packaging in cellophane, for four-color, all-over lithography, cohesive coating, glue-lap manufacturer's joint, and a tear-tape opener for corrugated boxes. Trends in the field are toward preshipment testing, palletizing, and pre-engineering industrial packs. 10 illustrations and 7 references. R.A.S.

MODERN PACKAGING. Meadow Gold butter. Modern Packaging 27, no. 2: 120-4, 236, 238 (October, 1953); *cf.* B.I.P.C. 17: 568.

The progress in packaging Meadow Gold butter, a product of Beatrice Foods Co., Chicago, from its early beginnings in 1895 to date is described, with particular reference to the recent development of a 15-pound parchment laminated to 0.00045 aluminum foil for wrapping quarter-pound prints. The advantages of the foil-parchment combination are discussed. The Elgin-style flat butter carton was retained after the adoption of the foil wrapper. 11 illustrations and 2 references. R.A.S.

PAPER—COATED

DANKERT, F. J. Offset inks for coated papers. Tappi 36, no. 10: 132-3A (October, 1953).

The author discusses surface problems of coated papers in relation to lithographic inks and various types of inks (linseed varnish, semisynthetic, fast-set, heat-set, gel-type, and gloss inks) developed to overcome them. Although it is hard to define what makes a good or bad ink, in general it relates to body or viscosity, tack, and flow properties; these, in turn, are tied in with the receptivity and absorbency of the stock. The factor of ink viscosity is particularly important at high speeds. E.S.

HAGEMEYER, R. W. New developments in paper coating pigments. Paper Ind. 35, no. 7: 783-4 (October, 1953); *cf.* abstract below.

The author discusses recent refinements in paper-coating pigments, with particular reference to developments in precipitated calcium carbonates of uniform particle size and shape, resulting in improved smoothness, ink receptivity, brightness, opacity, and color of the coated products. E.S.

HAGEMEYER, R. W., and HALL, GEORGE E. Progress report on the development of a calcium carbonate for high gloss paper coatings. Tappi 36, no. 10: 179-82A (October, 1953).

Development work on Purecal M [a precipitated calcium carbonate (I) produced by Wyandotte by the reaction of calcium chloride and soda ash] for making paper coatings of higher gloss is described. The differences in size and shapes which can be developed in (I) have a definite effect on their performance in different coating colors; gloss of (I) is a function of particle

size. The finer the particle size, the higher is the gloss. At a particle size corresponding to approximately half the wavelength of the visible spectrum (0.2-0.3 mμ), maximum hiding power is obtained; the particle size of Purecal M falls within this range. However, with decreasing particle size the tendency to agglomerate and the hardness of the agglomerate increase. A new type of Purecal of particle size 0.085-0.095 mμ (Purecal M-Fine) was developed and used for paper-testing work. The expected properties were higher gloss, better finish, higher ink receptivity, higher water absorption, and higher adhesive demand. Mill trials showed that Purecal M-Fine produced higher gloss and sheen, better coating lay, and improved printing properties by both letterpress and offset processes. However, the experimental work has not yet been concluded and no definite conclusions can be drawn. It is hoped that a complete report will be ready next year. 3 tables and 17 figures (including 15 electron micrographs). E.S.

JACOBS, ROBERT J. Considerations in the design of a universal coating machine for paper and board. Tappi 36, no. 10: 165-72A (October, 1953).

In a progression of diagrams, utilizing one-frame construction, the necessary steps to produce a universal coating machine are demonstrated. The initial setup includes one roll and a pan to show what can be done with the basic equipment; by adding extra rolls and auxiliary equipment, such as doctors, gravure rolls, air knives, metering bars, and coating knives, the machine can be expanded to illustrate the different coating possibilities. The diagrams representing the coating machine are carefully threaded so that the coated side of the web always emerges uppermost as it goes into an oven or cooling section. The same auxiliaries can be employed to good advantage in a variety of uses. The applicability of the universal coater to laboratory or pilot-plant work is excellent. On the production line, other objectives are more important; these include maximum operating speed and minimum down time, waste, and maintenance. These objectives often conflict with the requirement or desirability of versatility. In general, the most efficient production machine required to do a variety of work is one that is versatile within a carefully selected range of work. 28 diagrams. E.S.

KING, CHARLES F. Offset printing of coated papers. Tappi 36, no. 10: 133-6A (October, 1953).

The author discusses facts and theories concerning the offset lithographic process and the manner in which these affect or are affected by coated papers. The performance of the stock on the press is affected by the nature of the process; the composition of the rollers, blankets, and ink; and the construction of the press; in addition, there is the unpredictable factor, the pressman. All these factors must receive consideration. Improvements during recent years have met many of the lithographer's demands; the trouble is that they are not met consistently. No standard testing methods exist yet which will anticipate printing problems. The importance of wettability of the surface by the ink rather than absorption of ink into the stock is pointed out. Up to this point most improvements in wettability have been made by the inkmakers, but it appears that improved wettability could be incorporated into the coating itself. E.S.

REED, ROBERT F., and WHEELER, GORDON. Operating factors in offset printing on coated papers. Tappi 36, no. 10: 137-40A (October, 1953).

The authors review some of the problems and pitfalls in offset printing on coated papers which relate to the printing process rather than the paper,

including press factors, printing plates, fountain water, and ink. Coated papers require a higher precision and more perfect functioning of the press than uncoated papers. Improved printing plates which require a minimum of dampening are a great help in avoiding printing defects, in preventing curl and dimensional changes in paper, and in promoting the proper drying of inks. 2 tables. E.S.

REYNOLDS, A. P., and FROST, F. H. Coated paper and offset lithography. Parts I and II. Tappi 36, no. 10: 130-2A (October, 1953).

The first of the two authors describes adjustments which had to be made in inks, fountain solutions, press blankets, plate grains, halftone pictures, and presses before coated lithographic papers could gain the broad acceptance which they enjoy in today's markets. The second author discusses improvements which had to be made in coated-paper characteristics to make them suitable for the process, including increased cohesive strength, stability against stretch and expansion, an almost water-impervious surface with correct porosity for ink, correct pH of the coating, and the maintenance of a coating which will not release materials which, in turn, may alter the fountain solution or ink. E.S.

SILVERNAIL, L. H., and HEISER, E. J. Pigmented size press coatings containing Dow Latex 512-K. Tappi 36, no. 10: 172-6A (October, 1953).

A progress report on size-press coatings employing Dow Latex 512-K (a copolymer of styrene and butadiene) since the initial press run approximately two years ago is made. Data on physical properties, typical size-press formulations, viscosity and density, coating weight *vs.* coating color solids, physical properties of conversion-coated papers, picking resistance, ink receptivity, and a comparison of size-press coated and starch-sized paper surfaces are presented. It is shown that the application of a pigmented size-press coating offers a number of advantages, both from a quality and cost standpoint, as a precoat for off-machine pigmented coatings, lacquer coatings, and clear latex overcoatings. Satisfactory paper for offset printing can be prepared using size-press coatings containing latex without additional coating operations. 5 tables, 8 figures, and 6 references. E.S.

ZETTLEMOYER, A. C. [Moderator] Coated paper in offset printing. Tappi 36, no. 10: 140-8A (October, 1953).

The text of a panel discussion is presented in which pH, blankets, odorless and tasteless inks, tunnel drying, bonding strength and picking tendencies, wettability without solubilization, high-gloss ink printing without overprint varnish, reverse embossing, stiffness of coated label paper, ink-film thickness, wet-strength resins for the reduction of expansivity and stretch, special inks for resinous coatings, discoloration of coated papers when varnished, testers for bonding strength, etc. were considered. E.S.

PAPER—DEFECTS

ANON. Paper has two sides. Indian Print & Paper 19, no. 1: 37 (July, 1953).

Directions are given for minimizing the ill effects of two-sidedness and mixed grain directions of paper in printing and bookbinding operations. E.S.

CRAIG, F. A. Paper and papermaking; defects in paper. Paper & Print 26, no. 3: 298, 300, 302, 305 (Autumn, 1953).

The main cause of defective paper is the presence of small particles of foreign matter, such as scale, slime specks, shive, resin specks, grease, mineral and metallic particles, rubber, wood splinters, and fiber clumps. Other frequent causes of complaint by paper users are variations in shade of color and thickness, faults occurring during sheet formation (such as water drills, rat tails, dandy lifting, picking, belling, and worming), inaccurately placed watermarks, and defects caused by crushing, blowing, rubbing, cockling, drying, and calendering. R.A.S.

PAPER—MERCHANDISING

YOWELL, L. Q. Capital Paper Company regains lost retail sales through paperware departments. Am. Paper Merchant 50, no. 10: 22-3 (October, 1953).

Faced with the problem of selling paper products on the retail level, the company increased its profits by the construction of display racks and their installation as paperware departments in retail stores. 1 illustration. R.A.S.

PAPER—PERMANENCE

WILSON, WILLIAM K., and HARVEY, JACK L. Effect of light on coated groundwood papers. Tappi 36, no. 10: 459-61 (October, 1953).

This paper summarizes an investigation of the degree of protection against light provided groundwood papers by commercial clay coatings. The light was similar to skylight filtered by ordinary window glass, but was applied at much greater intensity. Temperature of the papers was closely controlled at 31 to 33°C. The extent of deterioration was measured by changes in α-cellulose and blue reflectance. A purified sulfite, a soda-sulfite, and a newsprint were used as reference standards. It was found that clay coatings provide only partial protection against deterioration by light. 2 tables and 23 references. E.S.

PAPER—SHEET FORMATION

BRECHT, W., and FIEBIGER, H. Studies of the wire shake on a laboratory sheet mold. Wochbl. Papierfabrik. 81, no. 13: 448-56; no. 15: 565-8 (July 15, Aug. 15, 1953). [In German]

A modification of the Rapid-Köthen sheet mold permitted the shaking of the wire of the instrument; the apparatus and mode of operation are described. Since no other motion was imparted to the wire, the influence of wire travel effective on the paper machine was excluded. The formed sheets were subjected to a flat static pressing and drying which eliminated also the tensile stresses of the paper-machine draws and preferential shrinkage in any direction. The purpose of the present investigation was the study of the effect of the shake (I) upon sheet formation; no comparison of the data with those obtained on a paper machine was intended. The results obtained are only valid for the system and conditions employed during this study. The most marked effect of (I) was a decrease in the cloudiness of the resulting sheets, which was the more pronounced, the higher the flocculation tendencies of the suspensions had been; high consistencies and long-fibered pulps were particularly affected. On the shaken wire, a rather large percentage of the fibers oriented themselves in the direction of (I); with a large stroke and slow frequencies, almost twice as many fibers became oriented parallel to (I) than in the direction across it. However, even with rapid shaking, almost

33% more of the fibers will lie in the direction of (I) than across it. The tensile strength of both wet and dry sheets was higher in the preferred orientation of the fibers, although this effect was much lower than that of the latter. The dewatering period increases through shaking. A favorable influence of (I) upon the general strength properties (breaking length and bursting strength) could only be observed in a few instances and did not involve large increases. The relationships between (I) and its effects are discussed. 9 tables, 8 figures, and 16 footnotes. E.S.

PAYNE, CHARLES F., and GUTHRIE, WILLIAM E. Photographic measurement of drainage rate; a method for determining sheet-making rates in cylinder machines. Tappi 36, no. 10: 469-75 (October, 1953).

Studies to determine the sheet-forming rate for overflow cylinder-type paper machines are difficult because of the short time involved and the enclosed nature of the sheet-forming section. Equipment and a method, using motion-picture photography, are described for determining the drainage rate through a cylinder mold at any point during the majority of the sheet-forming interval. Knowing the white water drainage for any given point in the cylinder's rotation, the amount of web formed at this point may be calculated. The drainage test unit used duplicates the increasing papermaking head that develops as a cylinder enters the stock pond and maintains the constant head prevailing through most of the balance of the cylinder's rotation. Drainage and sheet-forming rate curves obtained for a particular single cylinder machine through use of this method are presented, and proposed applications for the method are described. The procedure is criticized in an addendum by A. Cunningham; a reply by the original authors is given. 12 figures and 2 references. E.S.

PAPER—VISCO-ELASTICITY

KUBAT, J. Paper as a visco-elastic body. IX. Studies on the plastic flow of paper. Svensk Papperstidn. 56, no. 17: 670-5 (Sept. 15, 1953). [In German; English and Swedish summaries] *cf.* B.I.P.C. 24: 119.

The relaxation of stress in paper at constant deformation was studied with the aid of a relaxation formula previously published by the author (*cf.* Kolloid-Z. 129: 73-7 [1952]). According to this formula, the time derivative of the stress, i.e., the rate of stress decay, is an exponential function of stress. It was observed that for approximately the first 50% of the total stress decay, the stress relaxation in paper can be described with one parameter only. The dependence of this parameter on the deformation of the sample, the form of the stress-strain curve, the frozen-in stresses, the anisotropy of the sheet, and its dependence on the presence of various chemical substances in paper were investigated. The parameter depends to a great extent on the deformation only, and is independent of the rate of deformation, assuming that no stress hardening occurs during the deformation process. The influence of water vapor on the relaxation time and on the equilibrium stress is shown. 5 tables, 5 figures, and 5 references. E.S.

PAPER AND PULP INDUSTRY

ANON. New England's paper potentials as revealed by The Arthur D. Little, Inc. report. Paper & Paper Products 95, no. 8: 13, 29-30 (Oct. 20, 1953).

Pertinent facts of the history of the production of paper in New England and their effect on the present status of the area's industry are presented.

Findings of growth factors affecting the industry and the industrial opportunities which should logically result are summarized from the facts given in the Arthur D. Little, Inc. report. The report concludes that the paper industry in New England is growing, even though it is not keeping pace with the national trend. The raw material situation appears adequate, but there is a need for education in forestry methods and a unified program leading to better utilization of wood-pulp resources. New England should concentrate on the specialty paper market, with particular emphasis on new product developments and applications of lumber by-products. 1 illustration. R.A.S.

ATCHISON, JOSEPH E. Pulp and paper industry in Algeria. Indian Pulp and Paper 8, no. 1: 44-9 (July, 1953).

A general description of the pulp and paper industry in Algeria is given, with particular reference to the CELLUNAF mill at Ali Baba (pulping straw and esparto by a continuous Celdecor-Pomilio process; *cf.* B.I.P.C. 20: 504), Papeterie-Cartonnerie Moderne at Maison Carrée near Algiers (using waste paper and straw), and several small units which use waste paper exlusively. The use of fast-growing eucalyptus trees is contemplated and offers excellent possibilities for future developments. E.S.

BHARGAVA, M. P. Lop-sided progress of the paper industry. Indian Pulp and Paper 8, no. 1: 30-5 (July, 1953).

Technical operations and production techniques generally practiced in bamboo and sabai-grass mills are discussed under the headings: pulp production methods, recovery of chemicals and utilization of waste heat, repairs and maintenance costs, and factual data on bamboo and sabai grass. The author views the progress of the paper industry in India as lop-sided and offers proposals to place the industry on a secure basis. Specific suggestions are presented on steering the industry; a committee for technical organization; a development committee and laboratory in the mills; the training of technical personnel; the development of fundamental and applied research, engineering industry, and labor trade unions; and factual data on raw materials. 1 table. R.A.S.

BÖRGER, HANS E. A. The Indian paper industry. Wochbl. Papierfabrik. 81, no. 7: 243-4 (April 15, 1953). [In German]

Following a brief historical introduction of the beginning of the Indian paper industry, its present status, development, and trends are reviewed. 2 tables. E.S.

EVEREST, D. C. Past progress and future outlook for pulp and paper industry. Paper Mill News 76, no. 39: 24, 26 (Sept. 26, 1953).

Following a few introductory remarks on the increase in pulp and paper consumption since 1919, the author discusses the possible effects of national income, increase in population, increases in cost of manufacture and distribution, and imports on the domestic pulp and paper industry. E.S.

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. Wood pulp. Unasylva 7, no. 3: 115-23 (September, 1953); *cf.* B.I.P.C. 22: 927.

The year 1952 brought a slackening in the rate of increase of general economic activity and in some countries an absolute decline. These setbacks were reflected in a sharp fall in the demand for certain pulp products which, in turn, reacted on the demand for pulp. Board and wrapping grades of paper

suffered a sharp setback, whereas production and demand for newsprint were well maintained. The averages of pulp production and output for the year show this decline, but a division of the yearly figures into quarters shows that the fourth quarter of 1952 rose sharply, indicating that recovery from the slump had already begun. The effects of the decrease in demand for pulp was most serious in the Scandinavian countries, since their industry is largely directed to the export market. Data are included for the United States, Canada, Sweden, Finland, Norway, the United Kingdom, France, Western Germany, Austria, and Italy. 12 tables and 4 figures. R.A.S.

INDIAN PULP AND PAPER. The Indian paper industry; a review in world setting. Indian Pulp and Paper 8, no. 1: 19-26 (July, 1953).

The background of the general economic developments of the world during 1952 are reviewed, followed by a more detailed report on the world pulp and paper industry. Production of pulp and paper in India is discussed, including raw materials (bamboo, sabai grass, and bagasse), the manufacture of newsprint, and short descriptions of 19 paper mills and 3 rayon manufacturers. 6 tables. R.A.S.

NEUBRECH, W. LEROY. Economic review. Southern Pulp Paper Mfr. 16, no. 10A: 12, 14, 16 (Oct. 10, 1953); Paper Ind. 35, no. 7: 780-2 (October, 1953).

The complete text without tables or charts of the Industry Report, Pulp, Paper and Board for June, 1953 is presented. 1 table on inventory trends and 3 charts from previous reports. E.S.

PETERSON, G. A. European paper industry. Southern Pulp Paper Mfr. 16, no. 10A: 16, 18, 20-1 (Oct. 10, 1953); Paper Mill News 76, no. 47: 10-11, 22 (Nov. 21, 1953).

The author reviews his activities while in continental Europe (Holland, Germany, France, Belgium, and Denmark) for the purpose of investigating the European market for paper machinery and pulpers. The investigation revealed that machinery cannot be profitably shipped from this country because of differences in wage scales which make it possible for machine builders in Europe to construct and sell equipment for approximately 75% of the American selling costs; the most suitable arrangements would be to have the machine built and marketed by a European paper-machinery builder. R.A.S.

STEPHENSON, J. NEWELL. Pulp and paper expansion continues in British Columbia. Pulp Paper Mag. Can. 54, no. 10: 116 (September, 1953).

Pulp and paper expansion in British Columbia and the co-ordination of pulp- and papermaking with lumber interests in the province are reviewed. R.A.S.

TURNER, JOHN S. Milestones 1933-1942. Pulp Paper Mag. Can. 54, no. 10: 109-15 (September, 1953); *cf.* B.I.P.C. 24: 121.

The fourth decade in the series on the history of the Canadian pulp and paper industry covers the gradual emergence from the depression, followed by a recession, and the outbreak of the second world war. E.S.

VOGEL, JOHN H. Has the pulp and paper industry over-expanded? Paper Trade J. 137, no. 18: 15, 27 (Oct. 30, 1953).

The author forecasts a slight decline in economic conditions in the pulp and paper industry for 1954, similar to that experienced in 1949. He describes the developments in the industry in recent years as a rapid expansion, but not necessarily overexpansion; compared with others, the pulp and paper industry has been relatively stable economically in the past and is expected to remain so, since the high rate of operation is merely a reflection of the demand for paper at all levels of consumption. R.A.S.

WHITTEMORE, LAURENCE. How forestry affects Maine's future. Paper Trade J. 137, no. 16: 50, 52-3 (Oct. 16, 1953).

Problems of the pulp and paper industry in New England are discussed, particularly that of raw-material supply. The area may well have an excess of raw material in the future as a result of integrated logging practices now being employed in which each piece of wood is put to its best economic use. R.A.S.

PAPER AND PULP INDUSTRY—EDUCATION

ANON. Paper merchants' educational course. Paper Market: 60, 62 (September, 1953).

The nationally recognized paper-merchanting course arranged by the National Association of Paper Merchants is a two-year course available for the benefit of the staffs of paper merchants and those of the printing and allied trades which handle paper. It is held at the technical colleges and institutions in the principal centers of Great Britain. The syllabuses of the first and second stages of the course are outlined. E.S.

PAPER AND PULP INDUSTRY—PUBLIC RELATIONS

INGALLS, EVERETT P., JR. Harvest from happiness. Southern Pulp Paper Mfr. 16, no. 10: 84 (Oct. 1, 1953); Pulp & Paper 27, no. 11: 108 (October, 1953); *cf.* abstract below.

The article is a reprint of the paper which won first prize in the Sixth Bolton Award Contest. R.A.S.

MANN, L. W. This, your employees believe. Paper Mill News 76, no. 44: 22-4 (Oct. 31, 1953).

Points of significance to management are summarized from the more than 150 papers presented in the Sixth Bolton Award Contest, sponsored by John W. Bolton & Sons, Inc. and the American Pulp and Paper Mill Superintendents Association. The subject of the contest was "The obligations of a company to its employees." Opinions are given on security and recognition, quality of management, gain advancement, information wanted, job rating, job training, and suggestion boxes. R.A.S.

PAPER AND PULP MILLS

ANON. The "large five" in the Japanese paper industry. Wochbl. Papierfabrik. 81, no. 10: 353-4 (May 31, 1953). [In German]

A brief review of postwar conditions in the Japanese paper industry is presented, with particular reference to the five largest manufacturing companies, i.e., the three separate firms formed after the breaking up of the Oji Paper Manufacturing Co. (*cf.* B.I.P.C. 20: 103), and the paper mills Hokuetsu and Mitsubishi. E.S.

PAPETERIES DE GENVAL, *Belgium.* Paper craftsmanship. Esso Oilways [International ed.] 5, no. 5: 16-18 (1953).

Machinery and manufacture at the Belgian plant, which produces high-quality wallpapers printed on hand-cut wooden rollers, kraft paper, and Balatum, an asphalt-impregnated floor covering, are described. 7 illustrations. R.A.S.

G. A. SERLACHIUS OY, *Mänttä, Finland.* Greaseproof paper from Finland. Esso Oilways [International ed.] 5, no. 5: 5-8 (1953); *cf.* B.I.P.C. 23: 28.

The machinery, manufacturing processes, and products of the Mänttä mill are described briefly. Of the mill's seven paper machines, one makes roofing felts, one cellulose tissues, two sanitary tissue, and the remaining three greaseproof paper. 13 illustrations. R.A.S.

SOUTHERN PULP AND PAPER MANUFACTURER. Mill and personnel directory. Southern Pulp Paper Mfr. 16, no. 10: 89-206 (Oct. 1, 1953); *cf.* B.I.P.C. 23: 161.

Data on executive personnel, plants and equipment, and products made in mills in 14 southern states, the District of Columbia, and Puerto Rico are listed in the 15th annual directory of pulp and paper mills. The data are interspersed with advertisements. R.A.S.

STEPHENSON, J. NEWELL. Semi-chemical newsprint at Richmond Pulp & Paper Co. of Canada, Ltd. Pulp Paper Mag. Can. 54, no. 10: 104-8 (September, 1953); *cf.* B.I.P.C. 24: 38-9.

A description of the machinery installed in the mill's recent expansion similar to that in the previous reference is given. The operation of the newsprint mill with semichemical pulp replacing most of the purchased sulfite is described, and the company's plans for future modernization are outlined. 1 table, 1 flowsheet, and 8 illustrations. R.A.S.

PAPER MACHINE OPERATION

K. H. Variations in basis weight and factors responsible for nonuniform paper-machine operation. Wochbl. Papierfabrik. 81, no. 8: 272-3 (April 30, 1953). [In German]

With reference to frequent disputes between beater-room and machine-room personnel (each holding the other party responsible for irregularities in basis weight of the paper coming off the machine), the author reviews briefly the four possible reasons for such variations, particularly on older machines which must constantly be operating at their upper speed limits to remain competitive: variations in steam supply, notably to the driers; variations in speed; variations in water quantities delivered to the beaters; and variations in pulp consistency. The causes of these irregularities and remedies are discussed; brief mention is made of the Voith and Trimbey consistency regulators. E.S.

PAPER SPECIALTIES

ANON. Cigarette paper. Esso Oilways [International ed.] 5, no. 5: 14-15 (1953).

Following a brief history of the origin of the manufacture of cigarette papers in France, steps in the method of producing the pulp (made from flax, hemp, and rags) and the paper are described. 6 illustrations. R.A.S.

ANON. New use for VCI. Modern Packaging 27, no. 2: 156-60 (October, 1953).

New forms and applications of volatile corrosion inhibitors in shipping packaging are described. The chemical, applied to the inside of the packaging medium (paper, cartons, envelopes, and bags), slowly gives off an invisible vapor which prevents corrosion of precision metal parts. The chemical will inhibit the action of rust on ferrous metal and corrosion on aluminum alloys; it is not recommended for other nonferrous metals. The effective range of the vapor is not more than 12 inches. A hermetic seal is not necessary, but a good closing is desirable to prevent rapid escape of the vapor. The chemical is reported to be nontoxic to humans. 10 illustrations and 4 references. R.A.S.

ANON. The parchment process. Tappi 36, no. 10: 102A, 104A (October, 1953).

A brief outline of the process for making vegetable parchment paper (including waxing and printing), and properties and applications of the paper are given. E.S.

ANON. Quality papers. Esso Oilways [International ed.] 5, no. 5: 22-4 (1953).

Papermaking techniques by hand (Maidstone, Kent) and machine (Markinch and Auchmuty, Scotland, and St. Paul's Cray on the outskirts of London) for producing high-grade writing, printing, and technical papers in some British mills are described. 8 illustrations. E.S.

CONTINENTAL COFFEE COMPANY, *Chicago.* Tape replaces tea bag tag and string. Packaging Parade 21, no. 249: 134-7 (October, 1953).

Costly sewing operations necessary with the string and tag used on individual tea bags were eliminated when the company began producing a two-ply paper tape heat sealed to the center of one edge of the bag. A single machinery unit automatically forms, fills, and seals the bag, attaches the tape, and wraps it around the bag. 7 illustrations. R.A.S.

THE CRYSTAL TISSUE COMPANY, *Middletown, Ohio.* Industry turns to tissues. Paper & Twine J. 27, no. 8: 12 (October, 1953).

Various ways in which tissue can be used in industry have been described in a booklet issued by the company; a few of the illustrations given include uses as protective wrappings for silverware, jewelry, other metal products, glassware, leather products, hosiery, and rubber toys; in tea bags (almost completely replacing the former cotton bags); and as interleaving for sheet metal, plastic, glass, paper, and other materials. R.A.S.

DAY, FREDERICK T. An ABC index to some popular British printing and writing papers. Paper Market: 74, 76, 78, 80 (September, 1953).

An alphabetically arranged list of printing paper and board definitions is presented. E.S.

DAY, FREDERICK T. Modern labelling papers. Paper & Print 26, no. 3: 290, 292 (Autumn, 1953).

Two types of label papers, heat-sealing papers applied by the applica-

tion of heat and pressure and pressure-sensitive, self-adhesive labeling papers, are described. An investigation of these types is recommended where difficulties have been encountered with ordinary grades of label paper. Heat-seal papers have also been used successfully for combining cloths and silks to a variety of backing materials and for coil winding of electrical equipment; pressure-sensitive label papers are ideal for fixing onto glass and china goods, watches, and similar articles. 1 illustration. R.A.S.

PAPER STORING

ALDERSON, A. J. Paper and the printer; printers' storage. Paper & Print 26, no. 3: 282, 284, 286, 288 (Autumn, 1953); *cf.* B.I.P.C. 24: 131.

Problems associated with the storing of paper are discussed; the problem considered most important is that of ease of handling. For most efficient handling of flat sheet papers, the author suggests the use of the most suitable resting bases (floor boards, stillages, or pallets), individual stacks for each quality and size of papers, nonremoval of wrappers and marking with the size and substance of the paper, and racks for small sizes and quantities. Storage of paper in reel or web form is also discussed briefly. 4 illustrations. R.A.S.

ANON. Decisions in paper and board storage tax in West Bengal. Indian Print & Paper 19, no. 1: 20-2 (July, 1953); *cf.* B.I.P.C. 23: 195.

The final form of the West Bengal Fire Services Act, 1950 will seriously affect paper and board storage in that state. Paper, cardboard, and pressed board in excess of a certain limited amount are considered inflammable articles and subject to a license fee, unless properly stacked and tightly pressed or baled. E.S.

DAY, FREDERICK T. The importance of paper absorption in printing. Paper & Print 26, no. 3: 330, 332 (Autumn, 1953).

The influence of the absorptive properties of paper on its behavior during printing and conversion is described, and the importance of proper atmospheric conditions during these operations is stressed. Useful directions for satisfactory paper storage are given. The fact is mentioned that china clay used in coating is much less influenced by moisture variations than the fibrous furnish and will assist in counteracting faults of paper contraction and expansion to a certain extent. R.A.S.

PHYSICAL TESTING—PAPER—BASIS WEIGHT

ANON. Nuclear energy goes to work on Wausau papers. Paper Mill News 76, no. 42: 115 (Oct. 17, 1953).

The Accuray beta ray recorder for basis-weight control (using S^{90} as radioactive source) installed at the Wausau Paper Mills Co., Brokaw, Wis. is described briefly. 2 illustrations. E.S.

CHARTRAND, J. Y. Automatic control with betameter. Paper Mill News 76, no. 42: 125, 140 (Oct. 17, 1953).

The experiences of the Rolland Paper Co. with a betameter installation on the wet end of a paper machine making sulfite papers in a wide range of basis weights are described. E.S.

PHYSICAL TESTING—PAPER—FORMATION

GLOVER, G. F., and RANCE, H. F. Apparatus for the measurement of sheet formation. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 34, no. 2: 247-63; discussion: 264-7 (June, 1953).

An account is given of an instrumental method of measuring the formation of paper. The sample is rotated at high speed and is scanned by a light spot. The transmitted light falls on a photocell whose output fluctuates with the variations in the paper. The resulting photocurrent then has an alternating component which can be amplified and measured to give a figure corresponding to the wildness of the paper sample. 6 tables, 9 figures, and 9 references. E.S.

PHYSICAL TESTING—PAPER—MOISTURE

BÜTTNER, M. Methods for measuring moisture content. Das Papier 7, no. 19/20: 397-8 (October, 1953). [In German] *cf.* B.I.P.C. 23: 40.

The principle and mode of operation of a new moisture tester, the Hydrotester developed by Albert Mark, Zurich, Switzerland, are outlined. E.S.

PHYSICAL TESTING—PAPER—SMOOTHNESS

SCHEID, LOUIS J., and HUPP, ARTHUR H. An approach to the evaluation of coated paper smoothness. Tappi 36, no. 10: 177-8A (October, 1953).

An optical tester, the Scheid smoothness tester for the evaluation of off-machine coated paper smoothness, and the various factors affecting the results are described. The reproducibility of testing is at least as good as with the Bekk tester; however, the instrument does not seem applicable to machine-coated or uncoated paper surfaces. 2 tables, 4 figures, and 13 references. E.S.

PHYSICAL TESTING—PULP—SCREEN ANALYSIS

ANDERSSON, OLLE. An investigation of the Hillbom and Bauer McNett fibre classifiers. Svensk Papperstidn. 56, no. 18: 704-9 (Sept. 30, 1953). [In English] *cf.* B.I.P.C. 23: 433.

The previous study of the Clark classifier was extended to cover two other instruments, the Hillbom or H-S and the Bauer McNett classifiers. The operating principle of both testers is outlined briefly. The same strong sulfite pulp beaten in the P.F.I. laboratory beater (*cf.* B.I.P.C. 19: 107-8) to four different grades classified according to the number of revolutions the beater was run was used. From the fibers retained on the different wire screens small samples were taken for fiber-length measurements under the microscope, employing the same technique as in the first study; fiber-length distribution curves, numerical average fiber lengths, weight average fiber lengths, and standard deviations were calculated, using a punched-card technique. The results are presented in diagrams and tabular form. They indicate that the three classifiers studied so far behave differently with respect to retention of long fibers and washing through of short fibers when identical pulp samples are used. The classification is far from sharp and the deviation from the ideal classifier (in which the classification factor is unity) vary, depending on mesh sizes, beating state, and washing time. However, a fairly good agreement can be obtained between the average fiber length of the sample as measured directly and as calculated from the results obtained by the apparatus. Great care must be exercised in interpreting the results from samples of different origin. However, the investigation has shown that variations in fiber-

length composition of similar pulps may be identified by a classifier with some degree of success, if the instrument is used under conditions which will allow satisfactory reproducibility. 5 tables, 11 figures, and 2 references.
E.S.

PHYSICAL TESTING—PULP—SHEET-MAKING PROCEDURE

ANON. A new small sheet-formation and -drying apparatus "Liliput." Wochbl. Papierfabrik. 81, no. 13: 482 (July 15, 1953). [In German]

A small and sturdy instrument for practical mill control in the beater room is described, which combines the sheet-forming and drying sections in one unit and corresponds to the directions given in the German standard 108 of Zellcheming. 1 diagram. E.S.

PLASTIC FILMS—TESTING

MORGAN, P. W. Structure and moisture permeability of film-forming polymers. Ind. Eng. Chem. 45, no. 10: 2296-306 (October, 1953).

Although there have been many studies of the moisture and gas permeabilities of self-supporting films, to a large extent these measurements have been confined to natural polymers and commercially available products, such as the rubbers and cellulosic materials. This study was undertaken to examine a wider variety of polymers and from the data to define the structural requirements for low-moisture permeability. The results indicate that most polymers possessing low-moisture permeability have: (1) a saturated or nearly saturated carbon chain; (2) a minimum of chain branching; (3) a high degree of lateral symmetry; (4) a fair degree of longitudinal symmetry; and (5) a very high proportion of relatively small nonhydrophilic substituents. Physical factors, such as orientation and crystallinity, may also contribute to reducing permeability. A high degree of compliance with most of these requirements may mask the lack of conformity in some one respect, such as unsaturation. From the information now available on the permeabilities of polymeric substances, it is possible to make films and coatings with the desired degree of permeability to a given gas or vapor. When the level of permeability to several differing gases cannot be obtained with one polymer, laminations may be used effectively. 5 tables, 5 figures, and 45 references.
E.S.

PLASTIC FILMS (NONCELLULOSIC)

AMBORSKI, LEONARD E., and FLIERL, DONALD W. Physical properties of polyethylene terephthalate films. Ind. Eng. Chem. 45, no. 10: 2290-5 (October, 1953).

Polyethylene terephthalate, the condensation polymer made from terephthalic acid and ethylene glycol, is available in both fiber and film forms, the former known as Dacron polyester fiber and the latter as Mylar polyester film. Mylar, produced in various gages from 0.25 to 7.5 mils, has a melting point of about 255°C. and a density of 1.38. It is tough and durable over a wide range of temperatures (—60 to 200°C.). Because, even upon immersion, it absorbs less than 0.5% water, the physical properties of Mylar are essentially the same wet and dry. This film is insoluble in most common organic solvents even at boiling temperature, but it is soluble in some polar solvents like phenol. It resists the action of mineral acids even at the boil. In strong basic solutions it is somewhat susceptible to hydrolysis. Mylar is unaffected by many electrical varnishes and impregnants at elevated temperatures. The

electrical characteristics of Mylar polyester film indicate it to be a superior dielectric. It has a high dielectric strength and high resistivity even at elevated temperatures. Mylar polyester film is a good barrier to the passage of water vapor, organic solvent vapors, odors, oils, and grease. 10 tables, 16 diagrams, and 5 references. E.S.

ANON. New status of the film liner. Modern Packaging 27, no. 2: 144-7, 233-4 (October, 1953).

The expanding use of the film-lined shipping container is considered one of the most important developments in shipping packaging during the last several years. These liners have demonstrated an inexpensive way of holding difficult items such as dusty, corrosive, volatile, and sticky products. The cylindrical and the flat-bottom types, materials used for the outer containers, types of heat-seal closures, and choice of films are discussed. 12 illustrations and 2 references. R.A.S.

DINWIDDIE, H. A. Vinyl cast film . . . development and application. Paper, Film and Foil Converter [previously Am. Paper Converter] 27, no. 10: 17-19 (October, 1953).

The characteristics, packaging requirements, cost, and applications of vinyl cast film are described. The film is produced by spreading or casting a vinyl chloride acetate resin solution on a stainless steel belt; the volatile solvent is removed as the belt passes through an oven. Six typical varieties of the film are listed, varying in thickness from 0.001 to 0.005 inch and in widths up to 36 inches. The importance of the plasticizer in determining the properties of the film is emphasized. 2 tables and 4 illustrations. R.A.S.

PLASTICS—FILLERS

BHATNAGAR, M. S., and DHINGRA, D. R. Fillers in the plastic industry. Indian Pulp and Paper 8, no. 1: 65-6, 68, 70-4 (July, 1953).

A brief description of some of the important fibrous and nonfibrous organic and inorganic fillers in the plastics industry is given, including wood flour, nutshells, cottonseed hulls, cotton flocks, α-cellulose, sisal, comminuted paper, paper pulp, lignin, textile fibers, asbestos, glass fiber, etc. 2 tables and 28 references. E.S.

POLYMERIZATION

WOHNSIEDLER, H. P. Polymerization in melamine-formaldehyde molded resins. Ind. Eng. Chem. 45, no. 10: 2307-11 (October, 1953).

A thermosetting resin in its molded form is both infusible and insoluble. These properties have generally discouraged direct attempts to reveal the molecular size and structure of the cured resin which have special significance in relation to its mechanical, thermal, and other useful properties. An approach to this problem has been made in the case of melamine-formaldehyde resins. Two stages of polymerization represented by the states before molding and after molding were considered. From a factor representing the extent of reaction, the determination of which is described, the average D.P. may be estimated in any given resin when the monomer-bonding mechanism and degree of cross linking in the polymer are known. A linear structure may be assumed for the resin before molding, and here values of 2.5 to 3.2 for average D.P. have been assigned. For the molded resin it is only possible to

estimate the average D.P. by reference to various idealized concepts of polymer growth. On the bases of experimental results, the most plausible polymer structure for fully cured molded resins is considered to be that of branched chains with infrequently spaced cross links producing spatial, network structures having average D.P. values above 20 to 30. Other structural features which are indicated include the methylene bridge as linking device and a large proportion of methylol groups within the molecular lattice. 1 table, 5 figures, and 16 references. E.S.

POPLARS

TRAYNARD, PH., and AYROUD, A. M. A study of the plant cell of poplarwood by means of chlorination. Assoc. tech. ind. papetière, Bull. no. 6: 153-63 (1953). [In French]

Following a historical introduction, the authors describe in some detail the treatment of poplar (I) sawdust with chlorine in anhydrous carbon tetrachloride under standardized conditions in the dark or in diffused daylight for varying time periods and, in another series, with varying concentrations of chlorine. The resulting products were always extracted successively with alcohol and (at 40°C.) with 1% sodium hydroxide, using in the latter case a liquor to wood ratio of 20:1. The chlorine absorption and the extractives were determined in all cases. The amount of chlorine absorbed varied with the concentration of chlorine in the solution and also increased with the time of treatment (within the range of 1-15 hours). Over long time periods (e.g., 140 hours) as much as 120 grams of chlorine/100 grams of wood were taken up from a solution containing 90 grams of chlorine/liter. During short reaction periods (2-8 hours), substitution predominates. Thereafter (at chlorine concentrations of 60-80 grams/liter) both substitution and addition occur and, at concentrations above 80 grams and at longer time periods, addition of chlorine predominates. The ratio of the loss of pentosans to the loss of lignin in the various chlorinations remains practically constant (*cf.* B.I.P.C. *23*: 724-5). Apparently chlorine absorption takes place in three stages, the first two reaching plateaus between 10 and 20, and 30 and 40 hours, respectively, whereas the third stage shows a steady increase with time. If pyridine is added to the chlorine solutions, these plateaus disappear and there is a steady chlorine absorption with time. The differences in the binding of chlorine are discussed in the light of previous work which is often contradictory. Studies with 72% sulfuric acid on microtome sections of (I) under the polarizing microscope show that the carbohydrates are degraded and that most of the lignin is concentrated largely in the middle lamella. When cross and longitudinal sections of (I) were chlorinated and treated as in the case of the (I) sawdust, a gradual elimination of lignin was noted, even from the secondary cell wall (II). Microscopic examination substantiated by photomicrographs clearly showed three distinct cellulosic layers in (II), separated by dark areas which originally contained lignin. The separation of these layers appeared correlated with the three delignification stages outlined above and is shown in appropriate graphs. Mild oxidation with sulfuric and chromic acids followed by alcohol extraction also showed the three cellulose layers in (II), which could be separated completely by subsequent treatment with aqueous sodium hydroxide. Similarly, (I) treated with acetic and nitric acid showed the three layers. The oxidation products of the middle lamella of (I) are alcohol insoluble and only removed by treatment with solutions of caustic soda. Apparently other woods like (extractive-free) chestnut, beech, and fir show after chlorination varying numbers of cellulose layers in the secondary wall, as indicated both by absorption studies and from (rather indefinite) photomicrographs. 1 table, 5 figures, 14 photomicrographs, and 37 references. L.E.W.

POWER, HYDRO-ELECTRIC

ANON. Great Northern utilizing new power supply. Paper Mill News 76, no. 39: 10-12, 14 (Sept. 26, 1953); *cf.* B.I.P.C. 21: 187.

The Ripogenus hydroelectric power development of Great Northern Paper Co., Millinocket, Maine involved the construction of a new power plant (McKay Station) about 4000 feet downstream from the dam and a 30-mile long, 115-volt transmission line from the power house to the mill. The completion of this development has added approximately 30,200 h.p. to the company's hydro capacity, with complete provisions for the future installation of an additional unit which would bring the capacity of Ripogenus to approximately 45,300 h.p. Details of the various construction problems are given. 1 map and 13 figures. E.S.

ANON. New power mill dam brings progress to "Frontier Quebec." Paper Ind. 35, no. 7: 760-2 (October, 1953); *cf.* B.I.P.C. 21: 575-6.

Twenty months after construction was begun, the McCormick Dam on the Manicouagan River in Quebec was producing power from its two 45,000-h.p. generators. Primarily constructed to guarantee reserve power for the newsprint mill of the Quebec North Shore Paper Co. at Baie Comeau and the growing needs of the town, the dam will also serve to power new industries in the district. Details of the construction are given. 3 illustrations and 1 map. E.S.

PRINTING AND PRINTER'S INK

ARNOLD, JOHN. Providing the right paper for the process. Paper Market: 68-9, 72 (September, 1953).

The benefits of exchange of knowledge between papermakers and users (printers or converters) are emphasized. The importance of fitness of paper for special uses with regard to selection of specialized papers, color, surface (finish) and its uniformity, and choice of type faces is discussed. E.S.

LUKER, LESLIE G. Developing problem inks. Paper & Print 26, no. 3: 306, 308, 310, 312 (Autumn, 1953).

Different types of inks and methods of formulating them which have been developed during the past 20 years are described, including heat-set, moisture-set, cold-set, infrared-set, and double-tone inks. The problems connected with the standardization of letterpress process inks are reviewed, and the fact is mentioned that the new British Standard 1480:1949 (based on PATRA research) has been found less satisfactory than was expected. Reasons for variations in these standard inks (poor keeping qualities) are given. The author believes that many of the difficulties which the printer encounters could be solved if he would test his materials before accepting them and place less blind reliance on inkmakers and PATRA standards. R.A.S.

MAKARIUS, THEODORE F. Review of drying problems. Modern Lithography 21, no. 10: 77, 185 (October, 1953).

The reasons for ink-drying problems (slow setting on the printed sheet, insufficient drying of the ink so that it is not scratchproof, too hard drying to be overprinted, ink chalking, ink not drying in areas that are partially printed, and ink drying on only part of the run) are given, and remedies are suggested. E.S.

RIDDELL, DAVID W. S. Nonpaper factors and quality of offset lithography. Tappi 36, no. 10: 136-7A (October, 1953).

The author discusses some of the variables in litho platemaking and press operation which affect the quality of offset lithography. E.S.

PRODUCTIVITY

ARCHIBALD, H. M. Reflections on 25 million tons of paper and board per year. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 34, no. 2: 159-68; discussion: 169-78 (June, 1953).

The author (who participated as one of the three British members of the first international O.E.E.C. mission to the United States in 1950, joining the group which dealt with paper and board manufacture) discusses the reasons for the high productivity and paper and board consumption in America, including higher machine speeds, mass production of a limited number of goods, the use of slush pulp from an integrated unit, instrumentation, and modernization. In a generalized way (with inevitable exceptions) he came to the conclusion that the British paper industry is at present inefficient when compared with the American. Suggestions for improvements along lines which are feasible in Great Britain are indicated. E.S.

PULP—EVALUATION

HIGGINS, J. J., and LEWIS, R. L. Evaluation of bleached kraft pulps for boxboard. Fibre Containers 38, no. 9: 110, 112, 114 (September, 1953).

The evaluation of bleached kraft pulps has been undertaken by The Ohio Boxboard Co., Rittman, Ohio to determine the satisfactory sources of pulp in the production of boxboard. Kraft pulps from the principal pulp-producing sections of the country, representing many different wood species, were evaluated in the laboratory. In the production of high-quality boxboard, the physical properties of the liner section of the sheet represent one of the most important factors. Scoreabiiity, uniformity of appearance, and printability are almost entirely dependent on the physical characteristics of the pulp used in the liner furnish. However, as with most factors in board production, certain compromises must be made in an attempt to select pulps with optimum performance. Hence, the evaluation has been based on several factors rather than on any one individual characteristic. The following factors were considered important in both board manufacture and conversion and used as a basis for evaluation: power requirement for stock preparation (time required to reach operating freeness between 300 and 400 ml. Canadian standard); scoreability (plotting burst factor against tear factor), and printability (pressure-smoothness relationship). Several tables are included which show how the different pulps can be rated. Bleached kraft pulps from northeastern species were found to be smoother than either the southern or northwestern krafts. However, considerably more knowledge is needed for drawing definite conclusions on the suitability of the different pulps. 4 tables and 2 figures. E.S.

RESEARCH

PARSON, JOHN L. Research appropriations. Tappi 36, no. 10: 80A, 82A (October, 1953).

A compilation of TAPPI research grants on projects financed by the TAPPI Research Appropriations Committee since 1935 is presented in tabular form. 1 table and 17 references. E.S.

RESEARCH LABORATORIES

ANON. The laying of the cornerstone. Norsk Skogind. 7, no. 9: 281-6 (September, 1953). [In Norwegian]

The ceremonies in connection with the laying of the cornerstone for the new building of Papirindustriens Forskningsinstitutt (Norwegian Pulp and Paper Research Institute) at Blindern in the presence of King Haakon VII are described. 8 illustrations. E.S.

PÉTERI, R. Organization and experimental methods used at the laboratory of La Régie Industrielle de la Cellulose Coloniale. Assoc. tech. ind. papetière, Bull. no. 5: 121-5 (1953). [In French]

The author discusses in some detail the pilot-plant equipment and techniques used in studying tropical woods that might be used in the paper industry. A typical investigation is outlined, showing the roles played by both the biometric and the chemical sections of the R.I.C.C. L.E.W.

SPROULL, REAVIS C. The Herty Foundation laboratory. Southern Pulp Paper Mfr. 16, no. 10: 74, 76, 78-81 (Oct. 1, 1953).

The activities and facilities of the laboratory and its pilot-plant equipment are described. During the last year, the Herty Foundation was primarily concerned in three very broad areas of investigations: the utilization of culled hardwoods, the use of bagasse, and a wide variety of specialized problems related to refining, bleaching, and papermaking. A pilot-plant equipment list is appended. 20 illustrations. E.S.

RESIN, SYNTHETIC

WOODRUFF, R. J., JR. Alcohol and paper do mix. Du Pont Mag. 47, no. 5: 10-11 (October-November, 1953).

Uses of Elvanol, trade name designating a group of polyvinyl alcohols of the Du Pont Co., are described, including coating of nylon, paper and paperboard, and gummed products. This synthetic resin imparts unusual adhesive and tensile strength, water resistance, oil resistance, and a smooth printing surface. 6 illustrations. R.A.S.

RUBBER

EDMONDSON, I. E. The use of rubber in the papermill. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 34, no. 2: 329-34 (June, 1953).

Rubber products used in the modern paper mill are discussed, including roll coverings; linings of pipes, tanks, and other metal installations; hose; transmission and conveyor belting; and insulation against vibration. R.A.S.

SAFETY

CLARY, E. J. How mills protect maintenance workers. Southern Pulp Paper Mfr. 16, no. 10: 82-3 (Oct. 1, 1953).

The high accident rate involved in mill off-floor maintenance is charged to a tendency of the maintenance staff to be careless and to the utilization of makeshift apparatus for performing maintenance functions. Safety programs giving special protection to these workers are designed to bring the worker to an awareness of the problems to eliminate carelessness and to promote the use of more efficient and safe equipment. 2 illustrations. R.A.S.

CLAUS, G. Safety clothing for woodsworkers. Pulp Paper Mag. Can. 54, no. 10: 138, 141-2; discussion: 142, 145-6 (September, 1953).

The difficulties encountered in the manufacture of safety boots and kneecaps for woodsworkers out of nylon, incorporating the nylon in the actual mold, are discussed. The products resulting from this research are boots and kneecaps which will withstand heavy blows from an axe or from a pulp hook. 2 illustrations. R.A.S.

WEISBORD, ALBERT. Can the envelope industry afford to forget safety? Paper, Film and Foil Converter [previously Am. Paper Converter] 27, no. 10: 26 (October, 1953).

The accident rate for the envelope industry (16.3) is given as 0.8 higher than the average for all manufactures. This rate is compared with other industries, reasons for the high rate are suggested, and a safety-promotion and accident-prevention movement is advised. 1 table. R.A.S.

SALARIES

KELLER, J. A. Executive compensation plans. Paper Ind. 35, no. 7: 793 (October, 1953); *cf.* B.I.P.C. 24: 135.

Well-conceived management compensation policies are essential in insuring dynamic business leadership by attracting and keeping executives of the best qualifications. These policies should provide a satisfactory salary level in comparison with other companies and industries, an equitable salary structure with reasonable pay differentials for positions of various skill and responsibility, and an incentive to stimulate management to exert extra efforts to expand sales and profits. 1 diagram. R.A.S.

SALESMEN AND SALESMANSHIP

FRANKLIN, S. W. How to supervise your salesmen. Paper & Paper Products 95, no. 7: 2 (Oct. 5, 1953).

The author's suggestions for effective supervision of salesmen include evaluation of each salesman's work, regular conferences, planned sales supervision, an effective system of sales reports, and praise in the form of thanks rather than congratulations. R.A.S.

FRANKLIN, S. W. How to train your salesmen on the firing line. Paper & Paper Products 95, no. 6: 1, 10-11, 18-19 (Sept. 20, 1953); *cf.* B.I.P.C. 24: 135-6.

Advantages of field sales training are pointed out and methods of choosing a suitable leader for this training are given. Preparatory to the field sales training plan, the salesman's attitude, selling skill, knowledge of product, and work habits should be analyzed. The actual program should include the following five steps: the placement of the salesman at ease, a review of key points in selling, the performance of examples of selling by the trainer, a sales attempt by the salesman without interference by the trainer, and finally corrections, if necessary, however never in the presence of a prospect, customer, or other associates from the company. 1 illustration. R.A.S.

SEMI-CHEMICAL PULPING PROCESS

HÄGGLUND, SVEN-ERIK. Some problems in the manufacture of high-yield pulps. Svensk Papperstidn. 56, no. 17: 651-9 (Sept. 15, 1953). [In Swedish; English summary]

The author reviews some of the problems encountered in the manufacture of high-yield and semichemical pulps (selection of process and equipment,

screening and refining, bleaching, slime and pitch troubles, the use of hardwoods, etc.). The results of some laboratory investigations in this field are given. 2 tables, 9 figures, and 5 references. E.S.

SHIPPING CONTAINERS

ANON. Glue-lap acceptance gains. Modern Packaging 27, no. 2: 128-9, 238 (October, 1953); *cf.* B.I.P.C. 22: 610.

The performance of glue-lap containers is recorded as very effective where containers are stored under frozen, refrigerated, and moist conditions; they are less expensive than those with taped or stitched joints, smooth on the inside, and able to make effective use of case-packing machinery. The only construction flaw found was an occasional poor glue application. 4 illustrations and 1 reference. R.A.S.

ANON. Heavy loads in corrugated. Modern Packaging 27, no. 2: 125 (October, 1953).

A saving in the cost of shipping containers for extremely heavy items (porcelain insulators for power lines and cutting tools) was realized through the replacement of wooden boxes with a new double-wall corrugated box with pad and partitions, constructed with weatherproof adhesive. 3 illustrations. R.A.S.

ANON. Proposals at lettuce container hearing. Fibre Containers 38, no. 9: 86-7 (September, 1953).

Proposed changes in the present specifications of lettuce boxes were discussed at a public hearing held by the National Container Committee in San Francisco on August 20, 1953; shippers, boxmakers, wire-stitcher representatives, railroad officials, and the inventor of the Vacuum Cooling process attended. The text of the proposed specifications, submitted by the Western Fresh Fruit and Vegetable Container Institute, is appended. The most interesting proposal in the statement concerns a request for permission to make boxes with two top flap creases about one inch apart; this is intended to eliminate the present unsightly practice of breaking flaps over the contents when oversize lettuce heads are packed. E.S.

COOPER, H. Packaging of glassware. J. Inst. Packaging 2, no. 20: 300-3 (2nd quarter, 1953).

Requirements for the packaging of glass products are discussed. Three general types of inserts (egg type, wrapper-type division, and star cut fitment) and tailored cartons for cathode ray tubes, hypodermic syringes, fluorescent tubing, rolled plate glass, microsheet and cover glass, and optical glass are described. 8 illustrations. R.A.S.

SHIPPING CONTAINERS—FIBER DRUMS

ANON. Fibre can manufacture. Boxboard Containers 71, no. 730: 28-31 (October, 1953).

The production of fiber cans at the American Can Co., Joliet, Ill. is described; the company produces numerous different-diameter cans, ranging from 0.75 to 7.5 inches. Advantages of each of the three different types produced (spirally wound, convolutely wound or laminated, and lap seam) are pointed out. Complicated equipment necessary for producing the aluminum pouring spout on a salt container and the composite container (fiber body with metal ends) with a metal dredge top is discussed. 7 illustrations. R.A.S.

SHIPPING CONTAINERS—TESTING

NATIONAL SAFE TRANSIT COMMITTEE. Pre-shipment testing. Modern Packaging 27, no. 2: 118-19, 202, 204, 208 (October, 1953).

The preshipment test procedures set up by the committee to determine in advance the ability of packaged units to withstand normal transit conditions and transportation hazards are described. The cycle of tests includes vibrations, longitudinal impact on an incline-impact testing device, and vertical drops. Participation is on a voluntary basis for manufacturers, container firms, testing laboratories, and carriers. 4 illustrations. R.A.S.

SODA MILLS

PAPER TRADE JOURNAL. Mead pushes the button on new soda mill. Paper Trade J. 137, no. 17: 20-5 (Oct. 23, 1953).

The operations of the new 110-ton bleached soda pulp mill at Chillicothe, Ohio are described. The output of the new mill is consumed by Mead's adjoining 11-machine paper mill; former shipments from the company's Kingsport Division in Tennessee are thereby eliminated. The new mill is designed to handle two kinds of wood. In addition to a mixture of aspen, willow, cottonwood, yellow poplar, gum, etc. which had previously been used, the mill will also handle oak, the most abundant wood in that region. Cooks of each type of wood can be made simultaneously or a mixture can be processed at once. All pulpwood is received by truck or railroad cars in five-foot lengths and from 4 to 15 inches in diameter. The completely new units of the pulp mill include the wood yard, wood room, digester building, brown stock washing, screen room, open-air causticizing plant, evaporator, recovery furnace, and turbine. Capacity for bleaching was available in existing equipment. 8 illustrations. E.S.

SPECIFICATIONS

LINCOLN, W. B., JR. Shipping container specifications. Fibre Containers 38, no. 9: 50, 52, 56, 58, 60 (September, 1953).

The author discusses carrier regulations and standards, and the standard practice and nomenclature in the fiber box industry, the individual box plant, and the box user's organization. The box user should always make certain that he and the boxmaker are talking the same language before going ahead with an order, particularly if he has not been doing business with a given boxmaker before. The information which the boxmaker requires is reviewed and reference is made to difficulties caused by printing layouts; directions for the correct measurement of a box are given. In conclusion, reference is made to performance specifications which require time and expensive equipment, and to less elaborate means which the box user can employ to check quality, with an occasional more comprehensive evaluation, preferably by a commercial testing laboratory. E.S.

THE PROCTER & GAMBLE COMPANY, *Cincinnati,* and SPECIALTY PAPERS COMPANY, *Dayton.* Case history of quality control. Packaging Parade 21, no. 249: 122-4 (October, 1953).

The specifications which Procter & Gamble requires of its Ivory soap wrapper and the ways in which these requirements are met by the paper supplier are listed, including an opaqued, reasonably soft and pliable paper, wax, ink, mold treatment, and sealing properties. The converter then formulates specifications of his own for his paper, ink, and wax suppliers. The controls over these materials, controls during production, and final controls are outlined briefly. 12 illustrations. R.A.S.

STARCH

LEWIS, FLOYD A. How corn products are used in paperboard and boxes. Fibre Containers 38, no. 9: 66, 68, 70, 72 (September, 1953).

The paper, paperboard, and paper-products industries are the largest non-food industrial users of cornstarch and dextrin. Unmodified or pearl starch and modified starches (oxidized starches, dextrin, gums, acid-modified starches, and enzyme-treated starches) find application. The author reviews the four principal uses (beater addition, surface sizing, coating, and adhesives) in some detail and mentions a few minor applications, such as zein for scuff-resistant coatings and corn sirup as a plasticizer in the manufacture of glassine. 2 illustrations. E.S.

STEAM POWER

WALTER, LEO. Power and process steam from steam turbines. Indian Pulp and Paper 8, no. 2: 130-6 (August, 1953).

The factors in the selection of a new industrial power plant involving the installation of a steam turbine are reviewed. 1 table, 5 figures, and 3 references. E.S.

WALTER, LEO. Sulzer equipment for the paper industry. Indian Pulp and Paper 7, no. 12: 563-8 (June, 1953); 8, no. 1: 57-60, 62-3 (July, 1953).

In the first section a brief description of papermaking is given, with reference to the methods developed by Sulzer Brothers and their products for use in the various processes. The second part deals particularly with power and heat generation and air handling with heat recovery. 1 table, 13 figures, and 1 reference. E.S.

STRAW

PAPER TRADE JOURNAL. H & D Trenton mill shows way to straw expansion. Paper Trade J. 137, no. 17: 30, 32-3 (Oct. 23, 1953); *cf.* B.I.P.C. 24: 91.

The straw-pulping operations of the Hinde & Dauch Paper Co. of Canada at Trenton, Ont. are outlined. The two most interesting features of the pulping stage involve the straw cutting and Va-Purge cooking system. The straw is chopped into lengths of 3 to 5 inches; wheat and oak straw are used in the approximate proportion of 7:3. The 10 digesters are of the conventional rotary type, 14 feet in diameter. Prior to the adoption of the Va-Purge cooking system, a conventional milk-of-lime soda cook was used. The new system uses only caustic soda as the pulping agent. Some waste paper stock is incorporated in the furnish to improve sheet formation and facilitate paper-machine operation (corrugating medium). It is claimed that pulp yield has increased from approximately 60 to 70% since the adoption of the Va-Purge process; cooking time has been reduced 30%. The elimination of lime from the cooking process and the harder pulp has made it possible to speed up the paper machine and to reduce the basis weight of the sheet from 32 to 26-27 pounds, with improved quality. 8 illustrations. E.S.

STREAM POLLUTION

MURDOCK, HAROLD R. Industrial wastes. [Sedimentation tank design] Ind. Eng. Chem. 45, no. 10: 105-7A (October, 1953).

The author emphasizes that the cardinal principle for the functional de-

sign of sedimentation basins is the provision of sufficient floor area to receive the settling particles and the construction of the flocculation chambers integral with the sedimentation basin, with a relatively large opening through the adjoining walls to minimize floc destruction. The basin should be designed as a long rectangular tank with a length 20 or more times the depth and width, so that the inlet and outlet zones will occupy only about 10% of the over-all tank length, and the remaining 90% will be a nonturbulent settling area. 1 figure and 2 references. E.S.

WILSON, JOHN N. Effect of kraft mill wastes on stream bottom fauna. Sewage Ind. Wastes 25, no. 10: 1210-18 (October, 1953).

The article presents the results of investigations of the water quality of the Clearwater and Snake Rivers in Idaho to determine the extent of pollution caused by untreated municipal and industrial wastes from the city of Lewiston, Idaho, in particular the kraft pulp mill at Lewiston which started operations late in 1950. Data of the biological studies on bottom fauna are given, with some discussion of correlated physical and chemical features. The investigation showed a deterioration in visible water quality and in the character of the stream bed downstream from where the effluent of the sulfate pulp mill is discharged. Although dissolved oxygen and biochemical oxygen demand were little affected by the discharge of pulp mill wastes, the presence of toxic substances (sulfides, mercaptans, and resin acid soaps) known to be components of kraft pulp mill wastes, and carbohydrate fractions, which stimulate growth of sewage fungi, rendered conditions untenable for most bottom fauna normally expected to be found in such a river. Those areas not physically within the zone of influence of the wastes were essentially comparable biologically in the two successive years (1950 and 1951) under investigation. 5 tables, 2 figures, and 11 references. R.A.S.

SULFATE MILLS

ANON. Harmac expands production to 210,000 tons bleached kraft. Paper Ind. 35, no. 7: 788-90 (October, 1953); *cf.* B.I.P.C. 24:143.

A description of the mill and equipment installed in the recent expansion of the Harmac mill of MacMillan & Bloedel Ltd. similar to that in the previous reference is given. 5 illustrations. R.A.S.

ANON. New Zealand's new kraft pulp mill makes first export shipment. Paper Trade J. 137, no. 14: 12 (Oct. 2, 1953); *cf.* B.I.P.C. 23: 820.

The recent first shipment of kraft pulp from the Kinleith mill in New Zealand to Australia marks a beginning of a new export industry for the Dominion. The new sulfate mill has a maximum output of 45,000 tons annually, of which approximately 12,500 tons will be sent to the Australian newsprint industry. 1 illustration. E.S.

ANON. Weyerhaeuser's new kraft mill. Paper Trade J. 137, no. 14: 21-2, 24 (Oct. 2, 1953); Paper Ind. 35, no. 7: 766-7 (October, 1953).

In the first article a detailed description of the new bleached kraft pulp mill at Everett, Wash. on the Snohomish River (*cf.* B.I.P.C. 24: 122) with an approximate daily output of 250 tons is given. The mill will use Douglas-fir chips either supplied by an elaborate aluminum-jacketed conveyor from Everett sawmills of the company or by railroad cars from more distant ones.

The pulp is cooked in six digesters and bleached in a six-stage bleaching system; the pulp-drying machine consists of a Rice Barton Fourdrinier with a Minton vacuum drier. The pulp will be sold in bales or reels; the reels are needed for the production of nitrocellulose which will be one of the mill's regular grades. 5 illustrations. The second reference covers the identical subject and consists of a very brief text with 10 illustrations. E.S.

CANADIAN PULP AND PAPER INDUSTRY. Harmac, the story of a $20,000,000 expansion. Can. Pulp Paper Ind. 6, no. 10: almost entire issue (October, 1953); *cf.* B.I.P.C. 24: 55.

The story of the Harmac Pulp division of MacMillan & Bloedel Limited, whose recent expansion makes it the second largest bleached sulfate pulp mill in the world, consists of the following articles which are listed by authors and titles: Anon. Harmac production now 210,000 tons bleached kraft, p. 14-16, 18, 20, 22, 24; Anon. Guiding the operation, p. 26, 28; Morton, R. E. Millwater supply, p. 30, 32; Cook, A. Increased chip and hog fuel handling, p. 34; Laakso, O. A. Digester, pulp washing and screening, bleach plant, p. 36, 38; Laakso, O. A. Machine room, p. 40; Laakso, O. A. Recausticizing, p. 42; Puppyn, H. L. Evaporators and chemical recovery, p. 44, 46, 48, 50; Farmer, C. T. Heat and water recovery, p. 50; Alexander, F. The electrical system, p. 52, 54; Anon. On the engineering side, p. 56, 58, 60; Anon. BC Power Commission supplies Harmac power, p. 62; and MacBean, A. P. Forest management and tree farming, p. 64, 66, 68, 72. Numerous illustrations. R.A.S.

SULFITE PROCESS

ROSENFELD, ALAN S. Some effects of extreme chip packing in the sulphite process. Tappi 36, no. 10: 128-9A (October, 1953).

Chip-packed and normal sulfite cooks were made under controlled conditions in an indirectly heated, forced-circulation laboratory digester (capacity about 7.5 cu. ft.) to determine the possible yield of screened western hemlock sulfite pulp obtainable with extreme chip packing (I) and the effects of (I) on the resulting pulp properties. Details of equipment, materials, and experimental procedures are given. The results with (I) indicated a 23-25% increase in the yield per unit digester volume for western hemlock calcium-base sulfite. With no change in the combined sulfur dioxide of the sulfite cooking liquor, extreme chip packing caused losses of 4.5% in G.E. brightness at 460 mμ and 0.8% in the yield of screened pulp; no losses in bursting strength, tearing resistance, or shortened cooking time were recorded. When the combined sulfur dioxide in the cooking liquor was adjusted for a (I) cook, so that the ratio of combined sulfur dioxide to moisture-free wood in the digester equaled the ratio for a normal cook, G.E. brightness increased 2 points, bursting strength 6.5%, and tearing resistance 11%. However, cooking time had to be prolonged. To translate digester yields from experimental-size equipment to commercial-size equipment, it may be assumed that chip packing within 0.5 inch of a digester wall is only 50% as great as at any point away from the walls. (I) greatly impeded the circulation of cooking liquor in an indirectly heated, forced-liquor circulation sulfite cooking system. 1 table. E.S.

SULFITE WASTE LIQUOR

SCHOEDLER, KARL. Better utilization of conifer and beechwood spent sulfite liquor through fermentation with butyl bacteria to acetone, butanol, and ethyl alcohol. II. The manifold application of these solvents for cellulose derivatives in the lacquer, rayon, and

plastics industries. Wochbl. Papierfabrik. 81, no. 13: 470, 472, 474, 476 (July 15, 1953). [In German] *cf.* B.I.P.C. 23: 585.

Statistical data are presented which show the enormous increase in the demand for solvents and plasticizers in industries which convert cellulose derivatives, such as the lacquer, rayon and staple fiber, and plastics industries. The large field of possible applications for acetone and butanol obtained from spent sulfite liquor for this purpose is pointed out. Cellulose glues and acetate lacquers are also extensively employed in the paper-converting industries. 8 tables and 3 references. E.S.

ULTRASONICS

MARTIN, A. E., JR. Ultrasonic treatment of lint cotton. Textile Research J. 23, no. 10: 727-30 (October, 1953).

Following a brief survey of the results obtained by previous workers with sonic and ultrasonic radiation in cellulose research, some preliminary investigations of the author on the effects of ultrasonic radiation on lint cotton treated in relatively large samples at nominal frequencies of 400, 500, and 800 kc. are described. Under the experimental conditions employed, no mechanical damage was induced in lint cotton; this is in contradiction to previously stated results. No cell-wall damage, fibrillation, or ballooning took place. Any sonically induced degradation in cellulose was found to be immeasurable, in agreement with results of other workers. Evidence of a crystallinity change was present to a small degree. Further work at higher energy levels and at the same and lower frequencies is needed to substantiate this finding. No damage to foreign matter commonly attached to lint cotton was observed; neither was there any evidence that sound under the conditions employed would be useful in effecting the separation of such material from lint cotton. 3 tables, 8 diagrams, and 9 references. E.S.

VANILLIN

ANON. The other half of the log. Dow Diamond 16, no. 4: 16-19 (October, 1953).

Mention is made of the research program of the Ontario Paper Co. (I), Thorold, Ont. which led to the manufacture of alcohol from spent sulfite liquor and to vanillin from the sulfite waste from which the fermentable sugars have been removed. The Dow Chemical Co. markets the pure vanillin produced by (I). 8 illustrations. R.A.S.

VOCABULARY, TECHNICAL

DAY, FREDERICK T. The ABC index of papers & boards etc. for the box & bag makers trade. Paper Box Bag Maker: 256-8; 313-14, 316 (May, June, 1953); 26-8; 78-80 (July, August, 1953).

An alphabetical list of trade names and terms used in the production of boxes and paper bags is presented. E.S.

WATER AND WATER TREATMENT

GUHA, S. R. D. Water in relation to paper manufacture. Indian Pulp and Paper 8, no. 1: 76-8, 80 (July, 1953).

The importance of an adequate water supply from both the qualitative and quantitative angle in the selection of a site for a new paper mill is discussed. 1 table. E.S.

WHITE WATER

MASON, E. A., and QUINCY, R. R. Centrifuge analysis for suspended solids in white water. Tappi 36, no. 10: 467-9 (October, 1953).

A rapid method for the determination of the suspended solids content of white-water streams has been developed using a small hand-powered centrifuge and calibrated glass tubes. This method is recommended for use in performing routine checks on the various waste streams in pulp and paper mills and in locating the source of losses which develop. Samples of white-water suspensions having known concentrations of filler and fiber were placed in glass tubes and centrifuged, two at a time. The height of the settled solids in the bottom of the tube was taken as a measure of the solids content of the original suspension. Calibration curves of this method are presented, showing the effect of tube shape, consistency, and filler-to-fiber ratio. The filler-to-fiber ratio was found to have no effect on the readings for ratios below 0.1. Even with higher filler-to-fiber ratios, a pronounced change in this ratio was required before a significant change in the calibration was achieved. The agreement between known samples and the curves presented was found to be within 5 lb. of solids/1000 gal. of slurry over the range studied (0 to 80 lb./1000 gal.). In the application of this method, calibration curves can easily be established for the particular type of furnish employed. Once this has been done, determinations of the suspended solids content of white water can be accomplished in approximately two minutes. 2 figures and 1 reference. E.S.

SCHMITT, PAUL J. White water utilization. Tappi 36, no. 10: 123-5A (October, 1953).

Improvements in the operation of two 20-year-old settling tanks for excess paper machine white water included the segregation of the rich and lean white waters and the correction of the flow rates, turbulence, and channeling; as a result of these measures the efficiency of the first tank rose to about 90%, brightness of the stock improved, clogging of the washer screens decreased, and sewer losses were substantially reduced. E.S.

WOOD

VILLIÈRE, A. A study of certain anatomical, physical, and mechanical characteristics of wood and their possible influence on the technology of pulp and paper manufacture. Assoc. tech. ind. papetière, Bull. no. 6: 164-92 (1953). [In French]

The author deals briefly with the anatomy of conifers and hardwoods, wood flaws, tension and compression wood, etc. Physical properties, including the influence of moisture, shrinkage, and density, and the variations between spring- and summerwood are outlined. The influence of wood properties on pulp- and papermaking processes is discussed. The purchase, storage, and chipping of wood, and penetration of wood and chips by hot and cold water and chemicals are reviewed. Fiber orientation during sheet formation and drying are described briefly, and the relationship between wood shrinkage and paper contraction in the machine and cross-machine directions is discussed. 14 tables, 31 figures, and 24 references. L.E.W.

WOOD—EXTRACTIVES

KURTH, E. F., and BECKER, EDWIN L. The chemical nature of the extractives from red alder. Tappi 36, no. 10: 461-6 (October, 1953).

The total extractive content of red alder bark was 24%, whereas that of the wood was 8.6%. The chief white coloring matters in the bark are the triterpene alcohol, alnulin, and its corresponding triterpene ketone, protalnulin. An unreactive material with a melting point of 254°C., phytosterol, and linoleic acid were also isolated by extraction with hexane. The red coloring matters in red alder are a phenolic xyloside, phlobatannin, a tannin-carbohydrate complex, and phlobaphene. Infrared absorption spectra of the phenolic xyloside, phlobatannin, and phlobaphene were similar. The phenolic xyloside has properties similar to those of the phlobatannin and amounted to 26.9% of the alcohol extract from the bark. Its ability to form dark-red colors, even more so than the phlobatannin, indicated that it might be the chief cause of the red stain in the wood. It exhibited the same color changes with variation of pH as the stain in the wood. Tannin analyses showed that the bark contained 4.2% tannin and the wood 0.74% tannin calculated on the ovendry weight of the materials. Part of this tannin was soluble in alcohol and amounted to 28.7% of the alcohol extract from the bark. Additional tannin was soluble in water and appeared to be combined with carbohydrate matter. Sugars found in the extracts were glucose, xylose, and arabinose. 5 tables, 1 diagram, and 12 references. E.S.

WOOD—SHRINKAGE

SEBORG, R. M., TARKOW, HAROLD, and STAMM, ALFRED J. Effect of heat upon the dimensional stabilization of wood. J. Forest Products Research Soc. 3, no. 3: 59-67 (September, 1953).

The authors show that the dimensional stabilization of wood caused by heating under more drastic conditions than those used in seasoning is not due to an ether cross-linking reaction, as was earlier supposed. Data for the heating of both paper and wood in the presence and in the absence of air indicate that air is not needed to cause dimensional stabilization. Up to a weight loss for wood of about 20%, the reduced hygroscopicity and dimension changes are dependent upon the weight loss and not upon the medium in which the wood is heated. The presence of air, however, does accelerate other secondary changes, such as changes in strength, and on prolonged heating it causes a reversal in the stabilization. Antishrink efficiencies exceeding about 54% are not obtainable by heating either in air or in nitrogen. If moisture is present, the same equilibrium values are usually attained at high temperatures as when moisture is absent, but at a more rapid rate, presumably because of the improved heat transfer. The percentage loss of volume on heating is unusually large; this contradiction must be due in part to a reduction in the volume of the cell cavities. The great loss in toughness and abrasion resistance and, probably, in the shear resistance of wood that has been given a significant dimensional stabilization by heating does not seem to be caused by oxidation, but to be inherently associated with the other chemical reactions which cause dimensional stabilization. Unless some way can be found to separate the dimension-stabilizing from the embrittling reactions, the commercial use of wood stabilized in this way will be quite limited. 4 tables, 11 figures, and 14 references. E.S.

WOOD OPERATIONS

CANADIAN PULP AND PAPER ASSOCIATION. *Woodlands Section.* Gadgets and gimmicks. Pulp and Paper Manual of Canada 21: 60-1, 64-5 (1953).

Some of the suggestions entered into the competition for awards of the Woodlands Section are described. 7 figures. E.S.

LAVOIE, GEORGES. Watering pulpwood. Pulp and Paper Manual of Canada 21: 56-7 (1953).

A combination of rake (similar to that employed in mill yards for reclaiming wood from the pile), a winch, and a tractor was used for watering pulpwood; it decreased the cost of this operation from 38 cents a cord with manpower to 7.2 cents in the same location. 1 table and 4 illustrations. E.S.

WILSON, M. R. Mechanical pulpwood loader. Pulp and Paper Manual of Canada 21: 53, 56 (1953).

A machine for loading sawlogs and pulpwood on trucks used by the Canadian International Paper Co. is described. 2 illustrations. E.S.

WOOD TRANSPORTATION

MCCOLL, B. J. Report on the Bonnard prehauler. Pulp and Paper Manual of Canada 21: 47, 49 (1953); *cf.* B.I.P.C. 22: 534.

Improvements incorporated in a third model (Bonnard Prehauler Mark III) for loading 4-ft. pulpwood on strip roads and the resulting advantages are described. 4 illustrations. E.S.

Patent Section

Although the abstracts of the United States and Canadian patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and the* Canadian Patent Office Record, *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies, and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets or over, the price is $1.00 per copy. Beginning with volume 21, the Canadian patents will be abstracted from the complete specifications.

ADHESIVES

CROZIER, ROBERT N., and WILSON, WILFRED K. Adhesive and coating composition from synthetic copolymers. U. S. patent 2,643,238. Filed May 29, 1951. Issued June 23, 1953. 3 claims. Assigned to Shawinigan Resins Corporation. [Cl. 260-33.8]

A hot-melt adhesive that will form a permanent flexible bond especially suitable for binding books and magazines is prepared from a copolymer of a vinyl ester and a salt of a monoalkyl maleic acid ester to which a plasticizer and a chlorinated diphenyl (Aroclor 1254) are added; the mixture is heated at 150°C. until homogeneous. The bonding strength of the adhesive is readily destroyed in dilute alkali permitting easy waste-paper salvage of treated material. W.B.W.

ASBESTOS

NOVAK, IZADOR J. Asbestos dispersions. U. S. patent 2,652,325. Filed April 1, 1952. Issued Sept. 15, 1953. 7 claims. Assigned to Raybestos-Manhattan, Inc. [Cl. 92-1]

Aqueous colloidal dispersions of chrysotile asbestos fibers (wherein the asbestos-dispersing agent employed is a water-soluble fatty acid soap) exhibit better drainage and sheet-forming characteristics on the paper-machine wire when the pH of the slurry is raised 0.5 to 1.5 pH units (pH 9.8-10.4 in the example) with an alkali such as potassium hydroxide. A soap whose fatty acid component has a carbon chain length between 12 and 18 carbon atoms (e.g., ammonium oleate) is preferred. W.B.W.

BARKERS AND BARKING

BOSWELL, JOHN R. Portable log debarker for sawmills. U. S. patent 2,652,867. Filed Oct. 10, 1949. Issued Sept. 22, 1953. 17 claims. Assigned to The Bark-Off Corporation. [Cl. 144-208]

The machine debarks logs by the combined action of spur wheels, chain flails, and smooth-tired wheels which abrade the bark from the log as it passes from station to station in the device. Complete removal of the bark

from crooked logs and from around branch stubs is claimed. The entire apparatus can be disassembled to facilitate movement to a new location. 31 figures. W.B.W.

BOUCHARD, OREZUL. Log barking machine. Canadian patent 495,823. Filed June 7, 1951. Issued Sept. 8, 1953. 2 claims.

A barking apparatus is provided with a toothed feed wheel set at an angle to the long axis of the log, thereby imparting a rotating and a forward motion to the log. Rotating knives strip the bark from the log as it is advanced through the machine. 8 figures. W.B.W.

DENISON, DONALD. Bark removing machine. U. S. patent 2,653,635. Filed Oct. 1, 1951. Issued Sept. 29, 1953. 2 claims. Assigned to Bates & Chard Company. [Cl. 144-208]

A machine is claimed for removing bark from slab wood by swinging hammers flexibly attached to a rotating shaft. The length of the hammers is graduated to approximate the curvature of the slab. 6 figures. W.B.W.

GRANT, REGINALD H. Bark-removing tool having oppositely rotating toothed rollers. U. S. patent 2,652,868. Filed Oct. 10, 1952. Issued Sept. 22, 1953. 3 claims. [Cl. 144-208]

A tool for peeling bark from redwood logs and the like is forced between the log and bark by oppositely rotating toothed rollers at the forward edge of the head. The lower roller is in contact with the log and the upper roller forces the bark up and back from the direction of travel of the tool. The rollers are driven by an electric motor (mounted on the head) through a suitable gear train. 4 figures. W.B.W.

BOARD, ASBESTOS

BERNARD, WILLIAM, and BERNARD, JOSEPH. Apparatus for manufacturing cement-asbestos board. U. S. patent 2,650,524. Filed Aug. 25, 1949. Issued Sept. 1, 1953. 5 claims. Assigned to American Asbestos Industries, Inc. [Cl. 92-43]

A vat connects with a receptacle containing cement-asbestos slurry with conduits for feeding the slurry to the receptacle and returning same to the vat when the vat level reaches a predetermined point. This is the same as Canadian patent 491,650 (March 31, 1953); *cf.* B.I.P.C. 23: 678. 5 figures. W.B.W.

BOARD SPECIALTIES

ACKER, RALPH E. Corner locking construction for paperboard containers. U. S. patent 2,652,185. Filed Jan. 6, 1950. Issued Sept. 15, 1953. 10 claims. Assigned to Container Corporation of America. [Cl. 229-35]

A corner-locking construction for a tray-type paperboard container is claimed. This is an extension of U. S. patent 2,573,379 (Oct. 30, 1951); *cf.* B.I.P.C. 22: 292. 2 figures. W.B.W.

BOLDING, HUBERT V. Bottle carrier. U. S. patent 2,652,968. Filed July 2, 1948. Issued Sept. 22, 1953. 4 claims. Assigned to The Bradley & Gilbert Company. [Cl. 229-28]

A collapsible cellular bottle carrier formed from lightweight paperboard

has a handle formed as a separate unit and engages the partitions in the cellular tray section in a manner that prevents rupture when a partial load of bottles is carried. 21 figures. W.B.W.

CURRIE, GROVER C. Bottle carrier. U. S. patent 2,653,742. Filed June 7, 1951. Issued Sept. 29, 1953. 8 claims. Assigned to Dacam Corporation. [Cl. 224-45]

A one-piece paperboard blank is folded to form a two-row bottle carrier with open sides and openings on top to hold the bottles in spaced relation and a medial panel extending upward from the bottom panel to separate the two rows. 7 figures. W.B.W.

MCFALL, WILLIAM W. Shirt packaging device. Canadian patent 495,841. Filed April 28, 1951. Issued Sept. 8, 1953. 4 claims.

This is identical with U. S. patent 2,649,228 (Aug. 18, 1953); *cf.* B.I.P.C. 24: 152. 7 figures. W.B.W.

MILCHIN, JACK. Bottle carrying carton. U. S. patent 2,653,749. Filed Jan. 26, 1949. Issued Sept. 29, 1953. 1 claim. [Cl. 229-28]

A bottle carrier is provided with end walls which completely enclose the lower portion of the carrier. This is identical with Canadian patent 480,601 (Jan. 29, 1952); *cf.* B.I.P.C. 22: 537. 6 figures. W.B.W.

O'REILLY, JOSEPH A. Combination shirt board and collar protector. U. S. reissue patent 23,712. Filed Oct. 3, 1952. Issued Sept. 8, 1953. 15 claims. [Cl. 223-71]

The center portion of a shirt board is cut and folded back over the collar of the shirt to provide reinforcement for the collar and prevent crushing. This is a reissue of U. S. patent 2,581,696 (Jan. 8, 1952); *cf.* B.I.P.C. 22: 452. 14 figures. W.B.W.

TUFTS, WILLIAM F. Slip resistant pants guard for coat hangers. U. S. patent 2,653,740. Filed Feb. 28, 1952. Issued Sept. 29, 1953. 1 claim. Assigned to L. M. Leathers Sons. [Cl. 223-98]

The application of a slip-resistant material (such as rubber latex) to the paperboard protector for supporting trousers on a coat hanger prevents slippage of the garment on the hanger. Likewise a strip of thin hard paper may be pierced with multiple punctures and applied to the guard strip with adhesive material, the sharp points holding the garment. 5 figures. W.B.W.

VINES, OSCAR L. Carrier for bottles and the like. U. S. patent 2,653,750. Filed Feb. 26, 1949. Issued Sept. 29, 1953. 6 claims. [Cl. 229-28]

A bottle carrier is formed from a simple paperboard blank so that it completely encloses the lower portion of the bottle. An adaptation of the carrier may also be employed in which the bottles are supported with the long axis in a horizontal position. 13 figures. W.B.W.

CHLORINE DIOXIDE

WAGNER, ERNST. Process for the preparation of chlorine dioxide. U. S. patent 2,653,079. Filed June 6, 1949. Issued Sept. 22,

1953. 3 claims. Assigned to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. [Cl. 23-152]

A dry inert gas (e.g., air) is passed through an acidified aqueous reaction solution containing sulfuric acid, a chlorate, and a reducing agent, such as oxalic acid. Sufficient water vapor is entrained by the gas to maintain the exothermic reaction at a temperature between 75 and 90°C. W.B.W.

DISPENSING CONTAINERS

FAY, JOSEPH W. Tissue dispenser. U. S. patent 2,651,409. Filed April 29, 1952. Issued Sept. 8, 1953. 5 claims. Assigned 50% to Irwin J. Mendels. [Cl. 206-57]

A dispensing cardboard carton is provided with fold and tear lines so that certain portions may be severed or removed to allow for withdrawal of the tissues. Deflection of a remaining portion of the top flap against the tissue blows a gust of air beneath the fold of the top sheet thereby raising the same. 4 figures. W.B.W.

ELECTRIC PRECIPITATORS

BEAVER, CHARLES E. Electrical precipitator for gas separation. U. S. patent 2,646,132. Filed Jan. 9, 1951. Issued July 21, 1953. 5 claims. Assigned to Research Corporation. [Cl. 183-7]

Recovery of solids from the flue gases of a sulfate recovery furnace is accomplished by directing the gases with entrained ash over a disk concentrator located at the bottom of an electrical precipitator, said evaporator operating in a sump containing weak black liquor. Ash removed from the precipitator plates is likewise collected in the sump where it is dissolved in the weak liquor. Liquor is removed from the sump at a rate commensurate with the solids concentration desired in the effluent. 4 figures. W.B.W.

FILTERING SPECIALTIES

TAYLOR, WILLIAM I., and GREBBY, JOHN W. Fibrous filter media. Canadian patent 495,811. Filed Aug. 31, 1948. Issued Sept. 1, 1953. 5 claims. Assigned to Camille Dreyfus.

Felted sheets of cellulose fibers treated with water-soluble cellulose ethers are used to produce filters for spinning solutions of cellulose acetate in acetone. This is identical with U. S. patent 2,620,283 (Dec. 2, 1952); *cf.* B.I.P.C. 23: 682-3. W.B.W.

FOLDING BOXES

ELLSWORTH, RANSOM C. Sealed container. U. S. patent 2,651,450. Filed May 8, 1950. Issued Sept. 8, 1953. 1 claim. Assigned to The Ohio Boxboard Company. [Cl. 229-44]

A paperboard container with a hinged cover member is sealed by application of adhesive to the end flaps and the sealing flap attached to the cover. The cover may be reclosed to protect unused contents of the container but cannot be resealed. 5 figures. W.B.W.

GOERS, EDWIN C. Carton. U. S. patent 2,650,751. Filed June 5, 1951. Issued Sept. 1, 1953. 1 claim. Assigned to Marathon Corporation. [Cl. 229-31]

A one-piece leakproof folding carton may be erected without the use of

adhesives or other fastening means and locked in the erected and closed position by an extension of the front wall of the tray which engages the front wall of the cover. 20 figures. W.B.W.

PFAFF, HAROLD A. Carton. U. S. patent 2,652,969. Filed Dec. 3, 1951. Issued Sept. 22, 1953. 7 claims. Assigned to Marathon Corporation. [Cl. 229-33]

A folding carton comprises a tray with a cover hinged to the rear wall and includes a locking flap on the front wall that engages the cover and retains it in the closed position. This carton is designed to be erected by the machine described in U. S. patent 2,649,676 (Aug. 25, 1953); *cf.* B.I.P.C. 24: 159. 10 figures. W.B.W.

ZINN, JULIUS A., JR. Carton. U. S. patent 2,652,186. Filed March 8, 1947. Issued Sept. 15, 1953. 6 claims. [Cl. 229-38]

A single-blank, rectangular carton of uniform or tapered shape embodies closure flaps of such size that the entire end of the carton is closed and sealed to prevent loss of finely divided material or liquids. This carton, even though made from relatively thin material, is strong and rigid. 7 figures. W.B.W.

INTERIOR PACKING

DUSSEAULT, JOHN L. Filler for cartons. U. S. patent 2,651,448. Filed Aug. 19, 1950. Issued Sept. 8, 1953. 2 claims. Assigned to Patent Protection Corporation. [Cl. 229-14]

Triangular-shaped, corrugated-board fillers are employed to position a boat or boat-shaped object (bathtub) packed in a corrugated-board shipping container. The fillers are positioned at the ends and sides of the object in such fashion that the pressures are transmitted to the sides and corners of the enclosing container. 10 figures. W.B.W.

MELTZER, SUSMAN. Protective wrapper for bottles or like fragile articles. Canadian patent 495,924. Filed Nov. 18, 1950. Issued Sept. 8, 1953. 7 claims. Assigned to Egg Fillers and Containers (Australia) Proprietary Limited.

A packing material for heavy articles such as filled bottles is formed by a corrugated sheet in which the corrugations are relatively short and interrupted by bands of uncorrugated material. These discontinuous corrugations are claimed to present greater resistance to crush than the conventional corrugated board. 5 figures. W.B.W.

SPALDING, RICHARD O. Carton and packing cell. U. S. patent 2,653,708. Filed April 26, 1949. Issued Sept. 29, 1953. 3 claims. Assigned to Owens-Illinois Glass Company. [Cl. 206-46]

A carton for packaging fragile articles such as a glass bottle includes an insert made from corrugated board folded to form panels that bear against side walls of the carton and support the bottle away from the sides of the carton. A second insert bears against the top wall of the carton and the shoulders of the bottle. 7 figures. W.B.W.

MACHINERY—BALERS

ROBINSON, PAUL C. Bag baling machine. U. S. patent 2,653,431. Filed Sept. 28, 1950. Issued Sept. 29, 1953. 6 claims. Assigned to Arkell and Smiths. [Cl. 53-57]

The machine claimed stacks paper bags on a sheet of wrapping paper; the stack is compressed mechanically and the wrapper secured adhesively to form a tightly packed bale. 4 figures. W.B.W.

MACHINERY—CALENDERS

NEELY, WALTER W. Calender roll guide and feed mechanism. U. S. patent 2,651,242. Filed Sept. 24, 1947. Issued Sept. 8, 1953. 4 claims. Assigned 50% to Herbert W. McAfoos. [Cl. 92-74]

Guide rollers are mounted in arcuate fashion in a frame on alternate sides of the calender rolls providing a web-guiding mechanism, so that threading the stack involves only starting the paper between the first guide roll and the first calender roll. Thereafter the paper is held in engagement with the calender rolls and threaded automatically between adjoining rolls. 5 figures. W.B.W.

MACHINERY—CARTON-FEEDING MECHANISM

KANE, GIDEON. Feed mechanism for carton blank forming apparatus. U. S. patent 2,652,247. Filed May 29, 1950. Issued Sept. 15, 1953. 4 claims. [Cl. 271-2.4]

The machine forms carton blanks from a continuous web of paper or boxboard which has been printed and perforated along one side of the web. The perforations are engaged by an intermittently driven, pin-carrying feed belt in the blank-forming apparatus to ensure registration of the blank with the printed material on the web. 17 figures. W.B.W.

MACHINERY—CHIPPERS

ALEXANDER, RONALD R. Feeding mechanism for chippers. U. S. patent 2,652,077. Filed Nov. 22, 1950. Issued Sept. 15, 1953. 3 claims. Assigned to Carthage Machine Company. [Cl. 144-176]

The mechanism claimed is particularly designed for feeding thin irregularly shaped material (e.g., sawmill waste) to a chipper. A horizontal conveyor is opposed by a flexibly mounted frame containing a series of rollers for pressing the material into contact with the conveyor, thereby feeding it at a controlled rate to the chipper knives. 2 figures. W.B.W.

MACHINERY—CONVERTING MACHINERY

HICKIN, ROBERT J. Carton erecting mechanism. U. S. patent 2,653,524. Filed May 2, 1951. Issued Sept. 29, 1953. 10 claims. Assigned to The Ohio Boxboard Company. [Cl. 93-51]

The machine for erecting cartons of the hook-end style is claimed to accomplish this with a very short stroke of the plunger mechanism; a completely formed and squared carton results. 10 figures. W.B.W.

KIMBALL, WALLACE D. Apparatus for packing and sealing shipping cases. U. S. patent 2,651,898. Filed Nov. 14, 1947. Issued Sept. 15, 1953. 3 claims. Assigned to Emhart Manufacturing Company. [Cl. 53-91]

Container blanks in the flattened position are fed from a magazine to the machine comprising U-shaped enclosures on a traveling conveyor; the machine erects the blanks, applies adhesive to the bottom flaps, inserts cans, bottles, etc. into the containers, applies adhesive to the top flaps, and seals the containers at high speed. 7 figures. W.B.W.

OVERLAND, LEO D., and LEVINE, JACK W. Method and apparatus for die-forming channels in cardboard cartons. Canadian patent 495,621. Filed Feb. 7, 1950. Issued Sept. 1, 1953. 3 claims.

Longitudinal channels are formed in the edges of ice-cream sandwich cartons for holding the wafers in place by pressing the carton between heated dies which form exaggerated bends in the walls of the carton. 13 figures. W.B.W.

MACHINERY—CUTTERS

ASHMAN, ARTHUR. Method of and apparatus for cutting paper and like webs. U. S. patent 2,651,364. Filed June 24, 1950. Issued Sept. 8, 1953. 7 claims. Assigned to Colodense Limited. [Cl. 164-17]

A bag tube, while still wrapped around the forming plate, is severed by knives operating in grooves above and below the forming plate. The upper and lower knives operate at a slight offset so that a flap is formed for adhesive application. Spring-loaded cams actuate the knife carriers so that the blade travel is sufficiently rapid to avoid interference with the moving bag tube. 5 figures. W.B.W.

BARLEY, LEO D. Hydraulic cutting machine. Canadian patent 496,136. Filed Aug. 22, 1949. Issued Sept. 15, 1953. 24 claims. Assigned to Harris-Seybold Company.

The cutter knife and the clamp of this paper cutter are actuated by hydraulic means with an interconnection through the electrical control system to ensure that the clamp engages the pile of paper before the knife and likewise that the clamp continues to engage the pile until the knife has withdrawn from it. 3 figures. W.B.W.

MACHINERY—DRYERS

HORNBOSTEL, LLOYD. Drier drum. Canadian patent 495,875. Filed Jan. 16, 1950. Issued Sept. 8, 1953. 11 claims. Assigned to Beloit Iron Works.

The heads of the drier drum are welded to the shell to form a simple integral unit. Each journal is mounted on a large plate which covers a hole in the drum head of sufficient size for the entrance of a workman; said plate is secured to the head by bolts. Steam and condensate lines are provided in the hollow journals. 6 figures. W.B.W.

KINRAIDE, WILLIAM T. R., and EBERLIN, WALTER C. Vapor heated roll. U. S. patent 2,643,099. Filed Nov. 4, 1950. Issued June 23, 1953. 1 claim. Assigned to E. I. du Pont de Nemours & Company. [Cl. 257-95]

A rotatable, cylindrical, vapor-heated roll for processing materials where accurate temperature control (±4°C.) is required (i.e., synthetic yarn) contains tapered walls forming a frustoconical vapor chamber. Rotation of the roll forces the condensate to the large end where the condensate pickup is located, thus keeping the liquid film on the inside of the wall thin and uniform. Improved heat transfer is attained. 3 figures. W.B.W.

MACHINERY—JOGGERS

COOPER, HAROLD E. Paper jogger. U. S. patent 2,650,825. Filed April 20, 1950. Issued Sept. 1, 1953. 1 claim. [Cl. 271-89]

A small inexpensive paper jogger developed for small business establishments comprises a platform supported on a resilient means (such as sponge rubber) and connected to an electromagnet. Intermittent current supplied to the magnet causes the platform to vibrate. 11 figures. W.B.W.

MACHINERY—PACKAGING MACHINERY

CARRIER, JOHN A. Wrapping and sealing machine for tampons. U. S. patent 2,652,670. Filed Nov. 20, 1950. Issued Sept. 22, 1953. 3 claims. Assigned to Sanitary Products Corporation. [Cl. 53-134]

Tampons are inserted into U-shaped blocks in a conveyor unit together with a web of flexible thermoplastic material (such as cellophane) which is then severed between units, wrapped around the tampon, and sealed first on the side seam and then at each end by suitable heating elements. 19 figures. W.B.W.

FUCHS, ALFRED R. Sealing mechanism for wrapping machines. U. S. patent 2,650,643. Filed April 3, 1948. Issued Sept. 1, 1953. 24 claims. [Cl. 154-42]

A series of successively heated and cooled rollers are brought into engagement with the areas to be sealed by the mechanism. End and bottom seals for articles such as loaves of bread wrapped in waxed paper are particularly suited to sealing by this means. The cooling rolls conduct the heat to the frame members and, except under extreme conditions, no artificial refrigeration means is required. 16 figures. W.B.W.

HEILMAN, BERNARD. Wrapping machine. U. S. patent 2,651,900. Filed July 5, 1951. Issued Sept. 15, 1953. 15 claims. Assigned to L. A. Young Spring & Wire Corporation. [Cl. 53-98]

The machine binds rod-like articles together at longitudinally spaced points by wrapping adhesive tape around the group. A wrapping head is provided at each point where the tape is to be applied. 10 figures. W.B.W.

HOWARD, STANLEY R. Container forming and filling machine. U. S. patent 2,651,897. Filed June 4, 1947. Issued Sept. 15, 1953. 1 claim. Assigned to Pneumatic Scale Corporation, Limited. [Cl. 53-89]

A heat-sealable paper web is fed into the machine and formed into a continuous line of open-topped bags. The bags pass under a filling device where a predetermined quantity of the product (tea, etc.) is allowed to drop into each bag. It is claimed that the correct amount is supplied to the bags at all times, including the starting and stopping operations of the machine. 2 figures. W.B.W.

MCGINLEY, JAMES J. Wrapping machine. U. S. patent 2,650,459. Filed May 17, 1947. Issued Sept. 1, 1953. 12 claims. Assigned to American Machine and Foundry Company. [Cl. 53-110]

A high-speed machine which will wrap a large variety of articles, such as cartons, boxes, and sliced and unsliced loaves of bread moves each article progressively and continuously through the foldway and past the end-sealing mechanism of the machine. Sealing is accomplished by means of sealing plates which engage the bottom overlap and the end flaps. Automatic means are provided to prevent breakage of machine parts in the event that articles

are improperly introduced into the machine from the infeed conveyor. 21 figures. W.B.W.

RIEMER, JOHN. Package top sealing apparatus. Canadian patent 495,743. Filed March 30, 1949. Issued Sept. 1, 1953. 5 claims. Assigned to Kraft Foods Company.

The machine seals the thermoplastic liner in a paperboard package while the latter is transported on a continuously moving conveyor. This corresponds to U. S. patent 2,629,977 (March 3, 1953); *cf.* B.I.P.C. 23: 604. 16 figures. W.B.W.

STENGER, RICHARD C. Machine for placing dishes in cartons or containers. U. S. patent 2,653,743. Filed Jan. 10, 1949. Issued Sept. 29, 1953. 2 claims. Assigned to Sutherland Paper Company. [Cl. 226-2]

Single paper plates are fed into receiving cartons by a suction cup device that removes a plate from the bottom of a supported stack and delivers it to a chute from which it drops into the container positioned under the chute. 8 figures. W.B.W.

TAGGART, ROBERT E. Wrapper tucking mechanism. U. S. patent 2,653,435. Filed Sept. 8, 1951. Issued Sept. 29, 1953. 6 claims. Assigned to Lynch Corporation. [Cl. 53-151]

A tucking mechanism which is readily adjustable for different sizes of rectangular tubular wrappers is claimed. Elements operating at either end of the package fold the paper in from the edges while the upper and lower flaps are flattened at a subsequent station in the machine. 7 figures. W.B.W.

MACHINERY—PASTING MACHINE

BURNETT, EDWARD N. Assembling and gluing for interlocking containers. U. S. patent 2,651,153. Filed Oct. 3, 1950. Issued Sept. 8, 1953. 18 claims. Assigned to Gerber Products Company. [Cl. 53-3]

The apparatus claimed applies glue to the projecting flaps of the containers that are to be joined in pairs for shipment (*cf.* U. S. patent 2,651,449 [Sept. 8, 1953] B.I.P.C. 24: 254), brings the two units together and applies pressure until the glue sets sufficiently for handling, then ejects the completed unit from the machine. 30 figures. W.B.W.

WAGNER, ADOLPH A., WERNER, ARNOLD J., and ROSS, WILLIAM R. Taping machine. U. S. patent 2,653,727. Filed April 8, 1950. Issued Sept. 29, 1953. 2 claims. [Cl. 216-22]

An adhesive-coated tape is applied to the cover flaps of filled containers as they are moved in spaced and aligned relationship on a conveyor. The tape is severed between cartons and pressure rollers force the tape into contact with the sides of the carton. 8 figures. W.B.W.

ZINN, JULIUS A., JR. Conveyer and adhesive applicator for carton blanks. U. S. patent 2,651,283. Filed June 30, 1949. Issued Sept. 8, 1953. 3 claims. [Cl. 118-2]

In an apparatus for handling irregular-shaped carton blanks, the blank

is removed from the bottom of the stack, then transferred to a conveyor with a direction of travel at right angles to the initial travel. This allows separation of the blanks in line with the tabs and divisions and prevents interlocks at the edges of the tabs. Blank-engaging lugs are employed to carry the blank past the adhesive applying roll, thus insuring accurate registration of the raised portion of the roller on the blank. 8 figures. W.B.W.

MACHINERY—PRESSES

HORNBOSTEL, LLOYD. Paper machine. U. S. patent 2,653,522. Filed Sept. 10, 1947. Issued Sept. 29, 1953. 11 claims. Assigned to Beloit Iron Works. [Cl. 92-49]

The press section claimed involves a first press assembly with rolls so arranged as to lie in a substantially horizontal plane to facilitate the threading of the tail of the wet web at the start of operations. To eliminate two-sidedness of the sheet a second press roll assembly in the nature of a reverse press is provided, so that first the upper and then the lower side of the wet web are subjected to a similar pressing and smoothing action against a bare press-roll surface. 2 figures. W.B.W.

HORNBOSTEL, LLOYD. Reverse suction press assembly. U. S. patent 2,653,523. Filed Sept. 27, 1950. Issued Sept. 29, 1953. 2 claims. Assigned to Beloit Iron Works. [Cl. 92-49]

The web traveling through the press section is always supported by one of several felts, while suction is alternately applied to opposite faces of the web. 1 figure. W.B.W.

MACHINERY—PULPERS

KARLSSON, KARL A. Pulp treating apparatus. U. S. patent 2,653,520. Filed April 22, 1948. Issued Sept. 29, 1953. 5 claims. [Cl. 92-26]

Dry lap, waste paper, etc. is disintegrated and reduced to a pulp suspension in a pulper comprising a circular tank with a shielded impeller mounted near the bottom. Positive circulation in the tank brings the material into contact with the impeller repeatedly and thus insures complete defibering. 5 figures. W.B.W.

MACHINERY—REFINERS

SUTHERLAND, DANIEL M. Grinding disk. U. S. patent 2,651,976. Filed Nov. 5, 1952. Issued Sept. 15, 1953. 14 claims. Assigned to Lionel M. Sutherland and Douglas G. Sutherland. [Cl. 92-26]

The grinding disk claimed contains a series of channels and grooves arranged in such a manner that passage of the pulp between the faces of the disks is controlled by check rings to insure uniform defibering. 8 figures. W.B.W.

MACHINERY—ROLLS

HORNBOSTEL, LLOYD. Antideflection roll, method of assembly, and use. U. S. patent 2,651,241. Filed May 17, 1949. Issued Sept. 8, 1953. 11 claims. Assigned to Beloit Iron Works. [Cl. 92-73]

A roll capable of withstanding heavy loads (such as the bottom roll in a calender stack) comprises a central supporting shaft and a roll shell supported thereon by a series of nested metal sleeves concentrically secured

together by a rubber insert sleeve. The support of the shell is arranged near the center of the load applied to the roll. Annular rings at either end join the shell to the supporting shaft near the journals. The supporting shaft is deflected when the roll is loaded, whereas the shell retains its true cylindrical shape. 7 figures. W.B.W.

MACHINERY—SCREENS

AHLFORS, STEN E. E. Apparatus for wet-treating fibrous matters. U. S. patent 2,653,521. Filed Nov. 4, 1946. Issued Sept. 29, 1953. 7 claims. [Cl. 92-36]

A perforated drum mounted for rotation within a vat is claimed for washing, screening, or dewatering pulp suspensions. Both the drum and the vat are resiliently mounted so that a vibratory motion may be imparted to enhance the screening action. Shower pipes mounted at the top of the drum provide for necessary cleaning. 6 figures. W.B.W.

MACHINERY—SHEET-FEEDING MECHANISM

ACKLEY, RAYMOND E. Book and wrapper feed mechanism for wrapping machines. U. S. patent 2,651,899. Filed April 20, 1950. Issued Sept. 15, 1953. 3 claims. Assigned to W. F. Hall Printing Company. [Cl. 53-98]

A band wrapper and its associated article (book, magazine, catalog, etc.) are fed simultaneously into the bite between the lower conveyor and the upper endless belts of the feed mechanism of a wrapping machine of the flat-wrap or fold-wrap type, simultaneously placing the article in register with and upon the wrapper immediately prior to engagement with the assembly. 10 figures. W.B.W.

MACHINERY—WAXING MACHINE

ZINN, JULIUS A., JR., WENNBERG, ODD, and SWENDSEN, JACK. Wax coating apparatus. U. S. patent 2,651,284. Filed June 1, 1950. Issued Sept. 8, 1953. 10 claims. Wennberg and Swendsen's interests assigned to Zinn. [Cl. 118-6]

Formed cartons are immersed in a heated bath of paraffin or other wax, drained of excess wax in a heated chamber, and then passed through a cooling chamber on endless conveyors. The carton-supporting means is suspended between two conveyor chains in such a fashion that the angular position of the carton varies. In this way, excess wax is emptied from the carton after passing through the waxing bath and the heated chamber. 17 figures. W.B.W.

MATERIALS HANDLING

RANDALL, HERBERT T. Method and apparatus for handling paper. U. S. patent 2,650,705. Filed Aug. 5, 1946. Issued Sept. 1, 1953. 14 claims. Assigned to The Champion Paper and Fibre Company. [Cl. 209-123]

A platform to support stacks of paper assembled during inspection, counting, etc. is mounted a short distance (i.e., 4-6 inches) above a slowly moving belt for transporting the stacks of paper from the sorter to the point where they are assembled on skids, etc. The platform surface is made up of small closely spaced rollers so that the sorter has but to start the stack moving and it feeds onto the belt conveyor as a uniform stack. Stacks of

sheets from adjacent sorting stations may pass under the elevated platform without interference. 7 figures. W.B.W.

MOLDED PULP ARTICLES

RISCH, ARTHUR H., and NELSON, ARTHUR J. Molded decoy. U. S. patent 2,651,873. Filed Dec. 14, 1950. Issued Sept. 15, 1953. 3 claims. Assigned to Pulp Reproduction Company. [Cl. 43-3]

A hollow molded-pulp decoy is claimed in which the head is detachable to make for more compact storage. The neck opening is used during the forming of the body to introduce the pulp slurry, thus producing a body without seams and of a realistic life-like shape. Attachment of the head to the body provides the necessary seal for the opening. 3 figures. W.B.W.

PACKAGING

AMATEL, HAROLD. Method of packing and container for fragile articles. Canadian patent 496,197. Filed Jan. 14, 1949. Issued Sept. 15, 1953. 10 claims. Assigned to Westinghouse Electric Corporation.

A method of packing fragile articles such as electric lamps involves an outer four-sided, open-end, single-face corrugated casing into which are placed two lamps in single-face corrugated wrappings and a third lamp without a wrapper. The unwrapped lamp is nested between the wrapped lamps and engaged frictionally to prevent falling from the outer wrapper when a wrapped lamp is removed from either end. 7 figures W.B.W.

FITZGERALD, FRANCIS H. Method and means for packaging. U. S. patent 2,653,429. Filed Sept. 24, 1951. Issued Sept. 29, 1953. 4 claims. [Cl. 53-9]

A bulk-packaging method to facilitate handling and shipping of finely ground material (such as taconite ore) (I) involves the following operations: A strip of wrapping material (paper or other suitable material) is formed to a continuous trough shape and filled to a predetermined depth with (I). The strip and (I) are rolled together in a spiral coil, whereby the wound portions of the coil act as a cover for those which are being wound; the open ends and edges of the coil are sealed with adhesive. 14 figures. W.B.W.

FOSTER, THOMAS W. Flatware package. U. S. patent 2,652,921. Filed May 21, 1951. Issued Sept. 22, 1953. 4 claims. Assigned to Container Corporation of America. [Cl. 206-45.19]

A paperboard tray for the packaging of flatware and the like holds a locking insert so disposed that a part forms a raised section to support the handles of the knives, etc. and a second raised portion medial of the bottom contains a series of slots to hold spoons and forks and a series of slits to hold knife blades. The edges of the insert abut the walls of the tray. 7 figures. W.B.W.

JUDD, CHARLES M. Packaging window shades. U. S. patent 2,653,710. Filed Sept. 8, 1950. Issued Sept. 29, 1953. 1 claim. Assigned to The Chas. W. Breneman Co. [Cl. 206-59]

A core for winding replacement window shades, especially of plastic material, is made from a tube of paper or cardboard and slit the length of the

tube to permit insertion of the stiffening strip at the bottom of the shade. 5 figures. W.B.W.

PAPER—COATED

CONNORS, HARRY E., and HATFIELD, ARCH L. Aqueous synthetic resin dispersion for the production of nontacky and nonblocking films and coatings. U. S. patent 2,636,870. Filed March 31, 1951. Issued April 28, 1953. 5 claims. Assigned to The B. F. Goodrich Company. [Cl. 260-29.6]

A resinous material which is nontacky, nonblocking, and suitable for paper coating is formed by polymerizing a mixture comprising 75-90% by weight of vinylidene chloride, 5-15% of vinyl chloride, and 5-15% of an alkyl acrylate in aqueous emulsion. Paper and boxboard coated with this material are flexible and resistant to water vapor and grease; they may be heat sealed. W.B.W.

HOWE, JOHN F. Coating articles with an olefin-sulfur dioxide resin. U. S. patent 2,637,664. Filed June 23, 1949. Issued May 5, 1953. 11 claims. Assigned to Phillips Petroleum Company. [Cl. 117-148]

A resin for coating paper, textiles, and the like is produced by emulsion polymerization of 1-butene 46.7 parts, sulfur dioxide 88.3 parts, lithium nitrate 0.5 parts, sodium di-*sec*-butylnaphthalenesulfonate 5 parts, and water 180 parts. The reaction is continued for 2.5 hours at 77°F., then the sulfur dioxide and the olefin are vaporized from the latex. A curing temperature of 250° is required to cure the resin and bind it to the base material. W.B.W.

JAHODA, EDWARD. Method of making paper. Canadian patent 495,662. Filed Oct. 19, 1946. Issued Sept. 1, 1953. 1 claim. Assigned to H. P. Andrews Paper Company.

A conventionally sized paper is coated with submicroscopic silica particles (4 to 40 mμ) to form a superior printing surface. The colloidal silica of Monsanto Chemical Co. Syton W-20 is mentioned as particularly suitable for this purpose. W.B.W.

REILLY, ARTHUR. Mineral coated paper and coating composition therefor. U. S. patent 2,651,580. Filed Sept. 1, 1949. Issued Sept. 8, 1953. 12 claims. Assigned to S. D. Warren Company. [Cl. 106-144]

The addition of 1-5% of ammonium resinate to a mineral coating composition is claimed to impart sufficient water repellence to the surface of the coated sheet, so that a reduced quantity of lithographic fluid is required for printing. W.B.W.

THOMPSON, RALPH N. Water resistant paper coatings and method of making same from urea-formaldehyde, ammonium metaphosphate, amylaceous material, and clay. U. S. patent 2,652,374. Filed Jan. 31, 1951. Issued Sept. 15, 1953. 7 claims. Assigned to Calgon, Incorporated. [Cl. 260-17.3]

A water-resistant coating composition for paper or paperboard is prepared from clay, melamine, or urea-formaldehyde resin (e.g., Parez 611 or 608, or

Beckamine P364A), starch, and about 0.20% ammonium metaphosphate as a catalyst. The viscosity of the coating color claimed is very low and does not increase upon aging. W.B.W.

WORDEN, ELMER J. Web coating machine. U. S. patent 2,653,566. Filed Jan. 18, 1951. Issued Sept. 29, 1953. 2 claims. [Cl. 118-63]

An air jet, directed at the edge of the web in a coating machine, prevents the accumulation of coating on the edge of the web or the coating rolls. The nozzle is located at the back side of the coating nip and close to it. 4 figures. W.B.W.

PAPER—COATED (HOT-MELT)

HORNBOSTEL, LLOYD. Thermoplastic film-forming machine. U. S. patent 2,651,076. Filed Aug. 17, 1949. Issued Sept. 8, 1953. 13 claims. Assigned to Beloit Iron Works. [Cl. 18-9]

A machine for producing a self-supporting film or applying a thermoplastic coating (polyethylene, etc.) to a paper web employs a heated floating shoe of arcuate surface opposed to a shearing roll of relatively large diameter. The coating material is held in the nip formed between the shoe and the shearing roll. The shoe may be tilted without disturbing the nip to present a new surface to the film-gaging portion of the nip. Thickness of the film is determined by the pressure applied to the shoe through a system of air-pressure controlled flexible diaphragms. 7 figures. W.B.W.

JUSTUS, EDGAR J. Machine for coating with thermoplastic materials. U. S. patent 2,651,077. Filed Dec. 30, 1950. Issued Sept. 8, 1953. 6 claims. Assigned to Beloit Iron Works. [Cl. 18-9]

The machine applies a thermoplastic coating material to a paper web and embodies a large shearing roll journaled on pivot arms and a relatively small doctor roll. Pressure is applied along the length of the doctor roll (without interfering with rotation) by rods connected to a system of diaphragms. The coating material is applied to the sheet at the nip formed by the doctor roll; said doctor roll may or may not be rotated during coating. 6 figures. W.B.W.

PAPER AS A TEXTILE MATERIAL

BRADY, CHARLES V. Bag. Canadian patent 495,877. Filed Aug. 27, 1951. Issued Sept. 8, 1953. 8 claims. Assigned to Bemis Bro. Bag Company.

An open mesh bag is woven from wet-strength paper yarn with a label strip encircling the bag at the midpoint. A warp yarn of lighter weight is used in the area covered by the label strip which is adhesively secured to the mesh. 5 figures. W.B.W.

PAPER SPECIALTIES

DAVIS, HAROLD C. Paper bag. U. S. patent 2,652,972. Filed Oct. 13, 1949. Issued Sept. 22, 1953. 2 claims. Assigned to Bemis Bro. Bag Company. [Cl. 229-55]

A paper bag constructed from single-layer lightweight kraft (80 lb. or lighter) with reinforcing corner strips of heavy paperboard is made especially for storage of empty cans in warehouse stacks. The bottom of the bag is made from cardboard or similar material. 7 figures. W.B.W.

DICKSON, ROY H. Repair service manifolding set. U. S. patent 2,653,831. Filed May 23, 1950. Issued Sept. 29, 1953. 3 claims. Assigned to Control Forms, Inc. [Cl. 282-23]

Record sheets and transfer sheets are superimposed in manifolding and detachable relation to make a convenient record of numerous operations performed on a single item handled by a business such as a dry-cleaning establishment. 6 figures. W.B.W.

GERARD, GEORGE A. Method of making shock absorbing and insulation material. U. S. patent 2,652,878. Filed Nov. 30, 1951. Issued Sept. 22, 1953. 1 claim. Assigned to Cottonwood Products, Incorporated. [Cl. 154-28]

A laminated sheet for shock-absorbent wrapping or insulating purposes comprises a layer of macerated printed paper (newsprint) filler between cover sheets of kraft or other suitable paper. A volatile printing-ink solvent (such as carbon tetrachloride or benzene) is sprayed over the layer of macerated material just in advance of its entrance between the cover sheets and passage through the embossing rolls where a pattern of alternate depressions and mounds is impressed onto the sheet. The longitudinal edges of the sheet are sealed togther by a previously applied adhesive. 4 figures. W.B.W.

GERHARDT, JAMES S. Paper adhesive tape. U. S. patent 2,652,351. Filed Sept. 2, 1949. Issued Sept. 15, 1953. 3 claims. Assigned to Eastman Kodak Company. [Cl. 154-53.5]

A pressure-sensitive tape, especially suitable for photographic purposes, is made by laminating two layers of a paper web (such as hemp paper) with adhesive, applying an impermeable coating to the reverse side of the tape, and two or more layers of pressure-sensitive adhesive comprising rubber, rosin, pitch, and zinc oxide to the top side. This tape is claimed to be less expensive than one made from a base sheet of transparent cellulose material and does not cause injury to photographic materials. 4 figures. W.B.W.

GREIG, HAROLD G. Method of marking. U. S. patent 2,653,126. Filed Feb. 23, 1950. Issued Sept. 22, 1953. 6 claims. Assigned to Radio Corporation of America. [Cl. 204-2]

A paper suitable for fascimile or telautograph systems and an electrolytic type of marking is produced by impregnating a coated white paper, glassine, or cellophane of the water-wettable variety with a solution containing sodium nitrate and sodium sulfamate. Upon passage of an electric current through the treated sheet, a shift in pH toward the acid side is produced which, in turn, causes the evolution of gas within the carrier. This causes a change in the opacity of the sheet which is visible to the unaided eye. 1 figure. W.B.W.

HYMAN, MARK, JR. Method of forming container blanks. U. S. patent 2,653,888. Filed Feb. 24, 1949. Issued Sept. 29, 1953. 1 claim. Assigned to Polaroid Corporation. [Cl. 154-116]

A continuous web of sheet material for single-use container blanks (twice or any multiple thereof in width of the desired blank) comprising a base (paper) sheet, a metal foil, and a coating of suitable thermoplastic resin such as polyvinyl butyral is coated in a narrow strip down the center with ethylcellulose, whereupon the web is split down the center of the

ethylcellulose band. Two widths of web for container blanks are thus formed, each web having a band of adhesive at one edge. 3 figures. W.B.W.

KAST, RICHARD P. High-strength paper and method of making. U. S. patent 2,653,870. Filed Oct. 22, 1949. Issued Sept. 29, 1953. 2 claims. [Cl. 92-3].

A strong paper suitable for wrapping paper, sealing tape, electrical insulation, etc. is formed by a combination of about 85% wood fiber and 15% long fiber (e.g., manila, sisal, cotton, nylon, etc.) added to the furnish late during the beating process, just prior to the headbox, or on the Fourdrinier wire. A latex emulsion size is added to the beater during stock preparation, and the sheet is surface sized with another latex emulsion during the drying process on the machine. W.B.W.

LONG, GRETCHEN G., and LONG, VERA Y. Package wrapper. U. S. patent 2,651,131. Filed Feb. 18, 1950. Issued Sept. 8, 1953. 6 claims. [Cl. 41-34]

A fancy package wrapping paper is claimed on which characters are printed, then a cut-out of the same character is superimposed over the printed character at a slight offset by means of a paper tab. In this manner the characters are given a three-dimensional effect. 4 figures. W.B.W.

MCFARLAND, JACK K., and NEISS, WILMER C. Disposable drinking cup. U. S. patent 2,652,971. Filed July 3, 1950. Issued Sept. 22, 1953. 1 claim. [Cl. 229-52]

Metal foil is laminated to the inside surface of a paper cup for waterproofing and preventing impairment of flavor of the liquid present in the cup. The handle is formed by a strip of paper with enlarged end portions which, in the retracted position, lies between the overlapped body walls and, in the extended position, is held by the enlarged end portions bearing against the cup wall. 3 figures. W.B.W.

MATTHEWS, ROBINSON E., and HARRISON, WARD D. Cigarette paper and method of making it. Canadian patent 496,123. Filed Dec. 21, 1946. Issued Sept. 15, 1953. 7 claims. Assigned to Ecusta Paper Corporation.

Cigarette paper containing calcium carbonate and ammonium phosphate burns to a grayish-white, flaky, and cohesive ash. This is identical with U. S. patent 2,580,568 (Jan. 1, 1952); *cf.* B.I.P.C. 22: 466. W.B.W.

NEWMAN, DOUGLAS A. Manifolding. U. S. patent 2,653,830. Filed Aug. 10, 1948. Issued Sept. 29, 1953. 14 claims. Assigned to Columbia Ribbon and Carbon Manufacturing Company, Inc. [Cl. 282-19]

Manifold paper with a carbon coating on one side and dry normally inactive adhesive applied to both sides of the web in narrow bands is made to wind in a satisfactory manner on the take-up roll without damage to itself by perforating the adhesive-coated bands with holes of such size and spacing that successive layers with adhesive coating lie on either side of the perforations of previous layers. 8 figures. W.B.W.

REID, DONALD T. Plasticized paper bags. Canadian patent 496,068. Filed June 4, 1949. Issued Sept. 15, 1953. 3 claims.

An apparatus and a method for the application of plastic coating to paper bags for shipment of chemicals, flour, feed, cement, plaster, etc. are claimed. The bag in the flattened position is carried on a conveyor through a spray chamber for the application of the coating and then through a drying chamber using infrared lamps and equipped with a suitable exhaust system for solvent recovery. 8 figures. W.B.W.

SCHAAR, CHARLES H. Corrosion inhibiting packaging material and method of making. U. S. patent 2,653,854. Filed Oct. 17, 1949. Issued Sept. 29, 1953. 7 claims. Assigned to The Cromwell Paper Company. [Cl. 21-2.5]

A vapor-phase rust inhibitor to be used in packaging metallic articles is made by reacting dicyclohexylamine and caprylic acid at room temperature; paper coated with wax containing dicyclohexylamine caprylate is claimed to give good protection to metallic articles. W.B.W.

SCHUR, MILTON O., and LEVY, ROBERT M. Cigarette paper. U. S. patent 2,652,834. Filed March 7, 1952. Issued Sept. 22, 1953. 8 claims. Assigned to Ecusta Paper Corporation. [Cl. 131-15]

Cigarette paper from beaten flax pulp containing calcium carbonate filler is treated with a solution containing diammonium phosphate, guanidine carbonate, and tetrasodium phosphate. Pick-up of the chemicals on the basis of dry paper is approximately in the ratio of 0.5 : 0.5 : 0.03% in the order listed above. Paper so treated burns with a grayish-white ash which adheres to the tobacco ash. W.B.W.

SCHUR, MILTON O., and LEVY, ROBERT M. Cigarette paper. U. S. patent 2,652,835. Filed March 7, 1952. Issued Sept. 22, 1953. 4 claims. Assigned to Ecusta Paper Corporation. [Cl. 131-15]

Cigarette paper formed from beaten flax pulp with a calcium carbonate filler is impregnated in a size press with a solution containing guanylurea phosphate so that the pick-up on the basis of the dry paper is approximately 0.75%. Paper so treated burns with a desirable grayish-white ash which adheres to the tobacco ash. W.B.W.

SEABORNE, CHARLES R. Storage bin. U. S. patent 2,651,447. Filed July 7, 1949. Issued Sept. 8, 1953. 2 claims. Assigned to Thilmany Pulp & Paper Company. [Cl. 229-4.5]

The side walls of a circular storage bin for farm crops, bulk chemicals, cement, etc. are formed from a multi-ply paper or like material reinforced with metal strapping secured between two of the plies. The ends of the walls are brought together and fastened through the metal banding to a cleat inside the bin. A cover and bottom may be included in the bin if desired. 10 figures. W.B.W.

SPOONER, LAURENCE W. Coating machine and electrode panel therefor. U. S. patent 2,650,565. Filed Dec. 30, 1949. Issued Sept. 1, 1953. 3 claims. Assigned to General Electric Company. [Cl. 118-51]

A device for depositing fibers or abrasive particles by electrostatic force on an adhesively coated base strip employs electrodes on either side of the base sheet. Corona formation is inhibited by completely enclosing the electrode in

an insulating material. Electrode panels of this type have a corona starting voltage substantially 280% of that of bare metal electrodes at the same spacing. 2 figures. W.B.W.

STEEN, HARFORD K., and THOMPSON, HAROLD L. Paper bag handle. U. S. patent 2,652,187. Filed July 8, 1950. Issued Sept. 15, 1953. 8 claims. Assigned to Interstate Bag Company, Inc. [Cl. 229-54]

Paper is formed into a handle by folding into a multi-ply strip; the formed handle is fastened to the inside walls of the bag tube. The bag tube is made from two strips—one forming one side and the adjacent edges and the other forming a panel which constitutes the other side. 10 figures. W.B.W.

TURNER, ROBERT H. Electrostatic coating apparatus. U. S. patent 2,651,287. Filed March 10, 1949. Issued Sept. 8, 1953. 7 claims. Assigned to Ransburg Electro-Coating Corp. [Cl. 118-51]

An elongated discharge head, connected to a source of high electrical potential, is employed for the electrostatic atomizing and deposition of liquid on a moving web. The discharge head is equipped with a plate at either end for purposes of modifying the field to prevent a fan-shaped discharge from the ends of the head and to gain better control over the pattern deposited on the sheet. 1 figure. W.B.W.

WASSELL, FRANK L. Index card and removable index tab. U. S. patent 2,652,059. Filed Nov. 15, 1950. Issued Sept. 15, 1953. 6 claims. Assigned to Georgene Parkin Wassell. [Cl. 129-16.8]

An index card is provided with a series of spaced apertures along one side to hold a tab or tabs attached to the margin of the card to facilitate the indexing of the card for special operations. 11 figures. W.B.W.

ZIMMERMAN, JEROME G. Manifolding transfer and method of making. U. S. patent 2,653,110. Filed March 17, 1948. Issued Sept. 22, 1953. 15 claims. Assigned to The Standard Register Company. [Cl. 117-36]

A transfer sheet is coated with an emulsion containing manganese nitrate, potassium sulfide, carbon tetrachloride, aluminum palmitate, and water; the coating is dried and a second coating applied containing lead nitrate, carbon tetrachloride, aluminum palmitate, and water. The coating is substantially white, solid, and nonsticky; when transferred by typewriter or other means to a receiving sheet and the receiving sheet is exposed to anhydrous ammonia, the image developed is semiblack, clear, and nonsmudging. 4 figures. W.B.W.

PLASTICS—FILLERS

CORDIER, DAVID E., and WILLIAMS, WILLIAM D. Production of articles of improved water resistance from urea-formaldehyde resins. U. S. patent 2,652,375. Filed March 8, 1951. Issued Sept. 15, 1953. 4 claims. Assigned to Libby-Owens-Ford Glass Company. [Cl. 260-17.3]

An improved thermoplastic molding composition with good water and shrinkage resistance is made by impregnation of α-cellulose with a melamine-

formaldehyde resin. The impregnated cellulose is dried, then impregnated with a urea-formaldehyde resin, again dried, and ground to obtain the powdered molding composition. W.B.W.

RAMIE

VAN DYK, JOHN C. Alkaline treating method for obtaining ramie and other fibers. U. S. patent 2,651,571. Filed June 26, 1948. Issued Sept. 8, 1953. 7 claims. Assigned to Howard E. St. John and Laura P. St. John. [Cl. 92-10]

A method of dissociating stem and leaf fibers from the gums, bark, and ligneous matter of undecorticated ramie, jute, hemp, sisal, pita, and linen or seed flax involves digestion with an aqueous solution comprising 2% by weight of an alkali metal silicate, mixed ethyl ethanolamines, and oleic acid. The cooking liquor is buffered to 12.4 to 13 and a pressure of 15 to 45 p.s.i. is maintained for a period of one hour. After washing and heating to a temperature of 80°C. for 30 minutes with a solution containing an aliphatic amino ethylamine, the fiber is dried and freed from entrained woody materials. W.B.W.

RAYON—CUPRAMMONIUM PROCESS

COURTNEY, EDWARD J. Method of making a cuprammonium cellulose solution. U. S. patent 2,651,581. Filed July 30, 1952. Issued Sept. 8, 1953. 4 claims. Assigned to Cellulose Fibers Incorporated. [Cl. 106-167]

This is very similar to U. S. patent 2,651,582 (Sept. 8, 1953); *cf.* abstract below. 6 figures. W.B.W.

COURTNEY, EDWARD J. Method of making a cuprammonium cellulose solution. U. S. patent 2,651,582. Filed Dec. 22, 1952. Issued Sept. 8, 1953. 10 claims. Assigned to Cellulose Fibers Incorporated. [Cl. 106-167]

A method and a machine are claimed for the production of cuprammonium cellulose solution that is substantially fiber-free. Violent agitation of the starting materials in the mixing vessel at a speed of from 1200 to 3500 r.p.m. brings all parts of the mixture rapidly and repeatedly into and out of the zone of agitation. The total elapsed time from starting agitation to fiber-free solution ready for the production of rayon, cellophane, sponges, etc. varies from three to seven minutes under usual operating conditions, i.e., when indicated proportions of the ingredients are maintained. 19 figures. W.B.W.

RAYON—VISCOSE PROCESS

BRADSHAW, WILLIAM H., and SCHMITZ, WILLIAM R., JR. Continuous process for making alkali cellulose. Canadian patent 495,694. Filed May 14, 1943. Issued Sept. 1, 1953. 4 claims. Assigned to E. I. du Pont de Nemours and Company.

A method and apparatus are claimed for adding cellulose and an alkali solution to a receptacle at a constant rate, withdrawing the slurry at a constant rate, and separating the alkali cellulose from the slurry through press rolls. This is identical with U. S. patent 2,452,542 (Nov. 2, 1948); *cf.* B.I.P.C. 19: 293-4. 1 figure. W.B.W.

SHIPPING CONTAINERS

BURNETT, EDWARD N. Container construction. U. S. patent 2,651,449. Filed Jan. 28, 1950. Issued Sept. 8, 1953. 12 claims. Assigned to Gerber Products Company. [Cl. 229-23]

Two individual box units are designed to be stitched or glued together by means of projecting flaps that are extensions of the top and bottom flaps of the individual containers. Portions of the flaps on the adjoining container are cut out to receive the projecting flaps. The boxes may be joined after filling, shipped as an integral unit to a central distributing point, and separated again to two individual units. 9 figures. W.B.W.

GEORGE, WALTER C. Folded-blank carton. U. S. patent 2,652,970. Filed Oct. 1, 1948. Issued Sept. 22, 1953. 2 claims. Assigned to Gaylord Container Corporation. [Cl. 229-37]

This carton is made from a one-piece blank scored and folded to provide meeting cover flaps and hand holds in each end with the flaps of the hand holds turned up to strengthen the carton and provide a rounded edge for gripping. 4 figures. W.B.W.

SCHWEICH, EDWARD F. Container for packaging toruslike objects and articles. U. S. patent 2,652,922. Filed March 8, 1950. Issued Sept. 22, 1953. 6 claims. Assigned to Lewin-Mathes Company. [Cl. 206-59]

This container for pancake-shaped objects or flat circular articles is formed from a square bottom section and an octagonal top section. Corner flaps of the bottom are folded over the octagonal top and adhesively secured. 8 figures. W.B.W.

SHIPPING CONTAINERS—MULTIWALL BAGS

BENNETT, RICHARD F. Valve bag. U. S. patent 2,651,451. Filed April 18, 1950. Issued Sept. 8, 1953. 1 claim. Assigned to Universal Paper Bag Co. [Cl. 229-62.5]

A multi-ply paper bag comprises a valve corner in which each ply in the valve possesses a series of slits to form independently movable fringe elements. It is claimed that this construction of the inner valve edge results in a better seal than otherwise possible without the use of insert sleeves, etc. 3 figures. W.B.W.

SULFITE PROCESS—NEUTRAL

GREENAWALT, JOHN E. Conversion of sodium sulfide to sodium sulfite. U. S. patent 2,642,336. Filed May 26, 1948. Issued June 16, 1953. 15 claims. [Cl. 23-129]

Spent sodium sulfite cooking liquors are burned in a reducing atmosphere to form a smelt containing sodium sulfide and sodium carbonate. This smelt enters a cooling chamber where it is quickly cooled to about 150°C. in a reducing atmosphere and solidified, then passed to a rod mill or similar pulverizer where the particles are crushed in the presence of an oxidizing atmosphere with the temperature controlled between 160 and 250°. Thereafter the pulverized particles are passed through another steam- or water-jacketed oxidizing chamber with the temperature controlled within the same range. A high conversion of the sulfide to sulfite is claimed with very little formation of sulfate or thiosulfate. 3 figures. W.B.W.

TALL OIL

CANFIELD, WILLIAM B. Jute fiber-coating resinous material and process of making same. U. S. patent 2,527,057. Filed Jan. 8, 1948. Issued Oct. 24, 1950. 4 claims. Assigned 50% to Montclair Research Corporation and 50% to Ellis-Foster Company. [Cl. 260-22]

A light-colored clear alkyd resin which is emulsifiable and adapted to the deposition of a nontacky flexible coating on jute yarn is produced by reacting at 250 to 300°C. a mixture of one mole of pentaerythritol, two moles of a mixture of tall oil and rosin, and one mole of a mixture of phthalic anhydride and maleic anhydride. W.B.W.

ELLIOTT, STANLEY B., and O'HARA, RAYMOND J. Drier composition for paints and the like. U. S. patent 2,528,429. Filed May 17, 1946. Issued Oct. 31, 1950. 18 claims. Assigned to Ferro Chemical Corporation. [Cl. 106-310]

A drier for use in paint, varnish, or ink is made by reacting a heavy metal with an acid (e.g., stearic, oleic, or tall oil acids) to produce a salt which is soluble in a solvent such as benzene. The above composition is stabilized with a partially esterified acid of phosphorus. The material is prepared as a solution of a light hydrocarbon solvent for addition to the paint or varnish. W.B.W.

FISCHER, PAUL W., and ROGERS, RAYMOND A. Drilling mud. U. S. patent 2,550,236. Filed June 10, 1946. Issued April 24, 1951. 18 claims. Assigned to Union Oil Company of California. [Cl. 252-8.5]

Drilling mud that has developed undesirable viscosity and water filtration properties through contamination with cement may be reclaimed by the addition of a mixture of oil-soluble sodium sulfonates, lubricating oil, tall oil, and triethanolamine. W.B.W.

LINDER, AKE V. B. Fractionating column. U. S. patent 2,515,090. Filed March 26, 1947. Issued July 11, 1950. 4 claims. Assigned to Mo och Domsjö Aktiebolag. [Cl. 202-158]

A distillation column employing horizontal baffles is particularly adapted for the fractionation of crude tall oil. This corresponds to Canadian patent 478,560 (Nov. 13, 1951); *cf.* B.I.P.C. 22: 385. 6 figures. W.B.W.

ROWE, WILLIAM. Thermoplastic composition. U. S. patent 2,532,197. Filed Feb. 17, 1948. Issued Nov. 28, 1950. 3 claims. Assigned to Bonafide Mills, Inc. [Cl. 106-281]

A thermoplastic composition useful in the production of coated sheets for desk tops, counter tops, wall or floor coverings, etc. is obtained by reacting at 200 to 300°F. a mixture of a drying oil pitch (cottonseed pitch or tall oil) with a petroleum olefinic hydrocarbon polymer to which lead, manganese, or cobalt driers may be added if desired. W.B.W.

VANILLIN

BRYAN, COLLIS C. Vanillin purification with distilling aid. Canadian patent 496,147. Filed Dec. 4, 1948. Issued Sept. 15, 1953. 15 claims. Assigned to Monsanto Chemical Company.

A process for the recovery of vanillin in high yield and purity from a crude concentrate using a liquid aliphatic hydrocarbon as a distilling aid is claimed. This corresponds to U. S. patent 2,506,540 (May 2, 1950); *cf.* B.I.P.C. 20: 768-9. W.B.W.

WASTE LIQUOR

MANNBRO, NILS V. Method of recovering hydrogen sulfide from sulfide containing soda liquors obtained in cellulose production. Canadian patent 495,731. Filed July 17, 1951. Issued Sept. 1, 1953. 4 claims. Assigned to Hellefors Bruks Aktiebolag.

Hydrogen sulfide is recovered from the smelt containing sodium sulfide and sodium carbonate by passing a solution of the smelt and carbon dioxide-containing gas in counterflow through an absorption tower. This corresponds to U. S. patent 2,611,682 (Sept. 23, 1952); *cf.* B.I.P.C. 23: 154. W.B.W.

WET STRENGTH

BRUNER, WALTER M., and KVALNES, HAMLINE M. Process for preparation of melamine-formaldehyde reaction products. U. S. patent 2,640,041. Filed March 9, 1950. Issued May 26, 1953. 3 claims. Assigned to E. I. du Pont de Nemours & Company. [Cl. 260-29.4]

A reaction product useful in the manufacture of wet-strength paper, textile finishes, floor coverings, etc. is obtained by condensing formaldehyde with an aqueous solution of melamine at 120 to 160°C. and under sufficient pressure to maintain the water in the liquid phase. 1 figure. W.B.W.

DAWSON, WILLIAM O., and SELLET, LUCIEN. Formaldehyde-dicyandiamide resins and the treatment of leather therewith. U. S. patent 2,637,622. Filed March 24, 1950. Issued May 5, 1953. 3 claims. Assigned to Jacques Wolf & Co. [Cl. 8-94.21]

The formaldehyde-dicyandiamide resins claimed add strength, water resistance, and body or feel to leather, fabric, and paper and are employed in conjunction with an anionic agent which may be free sulfonic acid, a water-soluble salt thereof, or an ester. In an example, five parts by weight of the anionic agent and an equal quantity of the resin are added to a beater containing sulfite pulp; the treated fibers are formed into paper in the usual manner. W.B.W.

WOOD TRANSPORTATION

WYSSEN, JAKOB. Overhead log carrier. U. S. patent 2,652,157. Filed May 14, 1947. Issued Sept. 15, 1953. 6 claims. [Cl. 212-98] *cf.* B.I.P.C. 21: 55.

An overhead carrier cable for the vertical transportation of logs over steep slopes employs control elements for preventing movement of the traveling carrier while the load is hoisted to the carrier cable. 13 figures. W.B.W.

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